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Signed Andrea Crerar

Dated 4 November 2004

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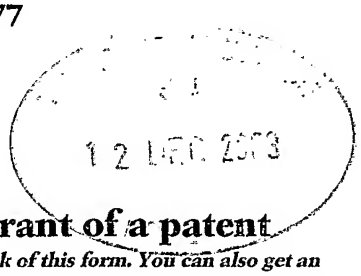

Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

12 DEC 2003

The Patent Office

Cardiff Road
Newport
South Wales
NP10 8QQ

1. Your reference

PPD 70314/GB/P

2. Patent application number
(The Patent Office will fill in this part)

0328905.5

3. Full name, address and postcode of the or of each applicant *(underline all surnames)*

SYNGENTA PARTICIPATIONS AG
Intellectual Property Department
Schwarzwaldallee 215
4058 Basel
SWITZERLAND

Patents ADP number *(if you know it)*

If the applicant is a corporate body, give the country/state of its incorporation

8029555001

4. Title of the invention

CHEMICAL COMPOUNDS

5. Name of your agent *(if you have one)*

"Address for service" in the United Kingdom to which all correspondence should be sent *(including the postcode)*

John Richard WATERMAN
Intellectual Property Department
Syngenta Limited
Jealott's Hill International Research Centre
PO Box 3538
Bracknell, Berkshire, RG42 6YA
UNITED KINGDOM

Patents ADP number *(if you know it)*

8029563001

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and *(if you know it)* the or each application number

Country	Priority application number *(if you know it)*	Date of filing *(day / month / year)*

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application	Date of filing *(day / month / year)*

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? *(Answer 'Yes' if:*

a) any applicant named in part 3 is not an inventor, or
b) there is an inventor who is not named as an applicant, or
c) any named applicant is a corporate body.
See note (d))

YES (b)

9. Enter the number of sheets for any of the following items you are filing with this form. Do not count copies of the same document

Continuation sheets of this form	
Description	106
Claim(s)	06
Abstract	01
Drawing(s)	00

SN

10. If you are also filing any of the following, state how many against each item.

Priority documents	
Translations of priority documents	
Statement of inventorship and right to grant of a patent *(Patents Form 7/77)*	
Request for preliminary examination and search *(Patents Form 9/77)*	
Request for substantive examination *(Patents Form 10/77)*	
Any other documents *(please specify)*	

11. I/We request the grant of a patent on the basis of this application.

SYNGENTA PARTICIPATIONS AG

Signature M A Rudd Date 12/12/03

Authorised Signatory

12. Name and daytime telephone number of person to contact in the United Kingdom

Margaret Ann RUDD 01344 413673

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Notes

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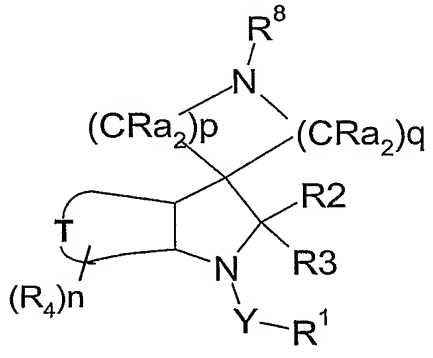
CHEMICAL COMPOUNDS

The present invention relates to hetero-spiroindoline derivatives, to processes for preparing them, to insecticidal, acaricidal, molluscicidal and nematicidal compositions comprising them and to methods of using them to combat and control insect, acarine, mollusc and nematode pests.

Aza-spiroindolines with pharmaceutical properties are disclosed in for example WO02/94825 and WO00/27845. Synthetic routes to selected compounds are described for instance in Bioorganic & Medicinal Chemistry Letters (1995), 5, 1875 and Tetrahedron Letters (2001) 42, 999.

It has now surprisingly been found that certain hetero-spiroindolines have insecticidal properties.

The present invention therefore provides a method of combating and controlling insects, acarines, nematodes or molluscs which comprises applying to a pest, to a locus of a pest, or to a plant susceptible to attack by a pest an insecticidally, acaricidally, nematicidally or molluscicidally effective amount of a compound of formula (I):



(I)

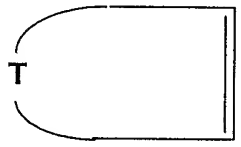
wherein Y is a single bond, C=O, C=S or $S(O)_m$ where m is 0, 1 or 2;

R^1 is hydrogen, optionally substituted alkyl, optionally substituted alkoxycarbonyl, optionally substituted alkylcarbonyl, aminocarbonyl, optionally substituted

alkylaminocarbonyl, optionally substituted dialkylaminocarbonyl, optionally substituted aryl, optionally substituted heteroaryl, optionally substituted alkoxy, optionally substituted aryloxy, optionally substituted heteroaryloxy, optionally substituted heterocyclyloxy, cyano, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted cycloalkenyl, formyl, optionally substituted heterocyclyl, optionally substituted alkylthio, NO or $NR^{13}R^{14}$ where R^{13} and R^{14} are independently hydrogen, COR^{15}, optionally substituted alkyl, optionally substituted aryl, optionally substituted heteroaryl, optionally substituted heterocyclyl or R^{13} and R^{14} together with the N atom to which they are attached form a group $-N=C(R^{16})-NR^{17}R^{18}$; R^{15} is H, optionally substituted alkyl, optionally substituted alkoxy, optionally substituted aryl, optionally substituted aryloxy optionally substituted heteroaryl, optionally substituted heteroaryloxy or $NR^{19}R^{20}$; R^{16}, R^{17} and R^{18} are each independently H or lower alkyl; R^{19} and R^{20} are independently optionally substituted alkyl, optionally substituted aryl or optionally substituted heteroaryl;

R^2 and R^3 are independently hydrogen, halogen, cyano, optionally substituted alkyl, optionally substituted alkoxy or optionally substituted aryl;

the ring



is a 5 or 6 membered heteroaromatic ring;

each R^4 is independently halogen, nitro, cyano, optionally substituted C_{1-8} alkyl, optionally substituted C_{2-6} alkenyl, optionally substituted C_{2-6} alkynyl, optionally substituted alkoxycarbonyl, optionally substituted alkylcarbonyl, optionally substituted alkylaminocarbonyl, optionally substituted dialkylaminocarbonyl, optionally substituted C_{3-7} cycloalkyl, optionally substituted aryl, optionally substituted heteroaryl, optionally substituted heterocyclyl, optionally substituted alkoxy, optionally substituted aryloxy, optionally substituted heteroaryloxy, optionally substituted alkylthio or $R^{21}R^{22}N$ where R^{21} and R^{22} are, independently, hydrogen, C_{1-8} alkyl, C_{3-7} cycloalkyl, C_{3-6} alkenyl, C_{3-6} alkynyl,

C_{3-7} cycloalkyl(C_{1-4})alkyl, C_{2-6} haloalkyl, C_{1-6} alkoxy(C_{1-6})alkyl, C_{1-6} alkoxycarbonyl or R^{21} and R^{22} together with the N atom to which they are attached form a five, six or seven-membered heterocyclic ring which may contain one or two further heteroatoms selected from O, N or S and which may be optionally substituted by one or two C_{1-6} alkyl groups, or 2 adjacent groups R^4 together with the carbon atoms to which they are attached form a 4, 5, 6,or 7 membered carbocyclic or heterocyclic ring which may be optionally substituted by halogen; n is 0, 1, 2 or 3;

each Ra is independently hydrogen, halogen, hydroxy, cyano, optionally substituted C_{1-8} alkyl, optionally substituted C_{2-6} alkenyl, optionally substituted C_{2-6} alkynyl, optionally substituted alkoxycarbonyl, optionally substituted alkylcarbonyl, optionally substituted alkylaminocarbonyl, optionally substituted dialkylaminocarbonyl, optionally substituted C_{3-7} cycloalkyl, optionally substituted aryl, optionally substituted heteroaryl, optionally substituted heterocyclyl, optionally substituted alkoxy, optionally substituted aryloxy, optionally substituted heteroaryloxy, optionally substituted alkylthio, optionally substituted arylthio or $R^{23}R^{24}N$ where R^{23} and R^{24} are, independently, hydrogen, C_{1-8} alkyl, C_{3-7} cycloalkyl, C_{3-6} alkenyl, C_{3-6} alkynyl, C_{3-7} cycloalkyl(C_{1-4})alkyl, C_{2-6} haloalkyl, C_{1-6} alkoxy(C_{1-6})alkyl, C_{1-6} alkoxycarbonyl or R^{23} and R^{24} together with the N atom to which they are attached form a five, six or seven-membered heterocyclic ring which may contain one or two further heteroatoms selected from O, N or S and which may be optionally substituted by one or two C_{1-6} alkyl groups, or two Ra groups attached to the same carbon atom are =O or two Ra groups attached to adjacent carbon atoms form a bond, or two Ra groups together with the carbon atom to which they are attached form a three- to seven-membered ring, that may be saturated or unsaturated, and that may contain one or two hetero atoms selected from the group consisting of N, O and S, and which may be optionally substituted by one or two C_{1-6} alkyl groups; or two Ra groups together form a group $-CH_2-$, $-CH=CH-$ or $-CH_2CH_2$; p is 0, 1, 2, 3, 4, 5 or 6; q is 0, 1, 2, 3, 4, 5 or 6 provided that p+q is 1, 2, 3, 4, 5 or 6;

R^8 is optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted aryl, optionally substituted alkoxy, optionally substituted aryloxy, optionally substituted alkoxycarbonyl,

optionally substituted alkylcarbonyl or optionally substituted alkenylcarbonyl; or salts or N-oxides thereof.

The compounds of formula (I) may exist in different geometric or optical isomers or tautomeric forms. This invention covers all such isomers and tautomers and mixtures thereof in all proportions as well as isotopic forms such as deuterated compounds.

Each alkyl moiety either alone or as part of a larger group (such as alkoxy, alkoxycarbonyl, alkylcarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl) is a straight or branched chain and is, for example, methyl, ethyl, n-propyl, n-butyl, n-pentyl, n-hexyl, iso-propyl, n-butyl, sec-butyl, iso-butyl, tert-butyl or neo-pentyl. The alkyl groups are suitably C_1 to C_{12} alkyl groups, but are preferably C_1-C_{10}, more preferably C_1-C_8, even more preferably preferably C_1-C_6 and most preferably C_1-C_4 alkyl groups.

When present, the optional substituents on an alkyl moiety (alone or as part of a larger group such as alkoxy, alkoxycarbonyl, alkylcarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl) include one or more of halogen, nitro, cyano, NCS-, C_{3-7} cycloalkyl (itself optionally substituted with C_{1-6} alkyl or halogen), C_{5-7} cycloalkenyl (itself optionally substituted with C_{1-6} alkyl or halogen), hydroxy, C_{1-10} alkoxy, C_{1-10} alkoxy(C_{1-10})alkoxy, tri(C_{1-4})alkylsilyl(C_{1-6})alkoxy, C_{1-6} alkoxycarbonyl(C_{1-10})alkoxy, C_{1-10} haloalkoxy, aryl(C_{1-4})-alkoxy (where the aryl group is optionally substituted), C_{3-7} cycloalkyloxy (where the cycloalkyl group is optionally substituted with C_{1-6} alkyl or halogen), C_{2-10} alkenyloxy, C_{2-10} alkynyloxy, SH, C_{1-10} alkylthio, C_{1-10} haloalkylthio, aryl(C_{1-4})alkylthio (where the aryl group is optionally substituted), C_{3-7} cycloalkylthio (where the cycloalkyl group is optionally substituted with C_{1-6} alkyl or halogen), tri(C_{1-4})alkylsilyl(C_{1-6})alkylthio, arylthio (where the aryl group is optionally substituted), C_{1-6} alkylsulfonyl, C_{1-6} haloalkylsulfonyl, C_{1-6} alkylsulfinyl, C_{1-6} haloalkylsulfinyl, arylsulfonyl (where the aryl group may be optionally substituted), tri(C_{1-4})alkylsilyl, aryldi(C_{1-4})alkylsilyl, (C_{1-4})alkyldiarylsilyl, triarylsilyl, C_{1-10} alkylcarbonyl, HO_2C, C_{1-10} alkoxycarbonyl, aminocarbonyl, C_{1-6} alkylaminocarbonyl, di(C_{1-6} alkyl)aminocarbonyl, N-(C_{1-3} alkyl)-N-(C_{1-3} alkoxy)aminocarbonyl, C_{1-6} alkylcarbonyloxy, arylcarbonyloxy (where the aryl group is optionally substituted), di(C_{1-6})alkylaminocarbonyloxy, oximes such as =NOalkyl, =NOhaloalkyl and =NOaryl (itself optionally substituted), aryl (itself optionally substituted), heteroaryl (itself optionally

substituted), heterocyclyl (itself optionally substituted with C_{1-6} alkyl or halogen), aryloxy (where the aryl group is optionally substituted), heteroaryloxy, (where the heteroaryl group is optionally substituted), heterocyclyloxy (where the heterocyclyl group is optionally substituted with C_{1-6} alkyl or halogen), amino, C_{1-6} alkylamino, di(C_{1-6})alkylamino, C_{1-6} alkylcarbonylamino, N-(C_{1-6})alkylcarbonyl-N-(C_{1-6})alkylamino, C_{2-6} alkenylcarbonyl, C_{2-6} alkynylcarbonyl, C_{3-6} alkenyloxycarbonyl, C_{3-6} alkynyloxycarbonyl, aryloxycarbonyl (where the aryl group is optionally substituted) and arylcarbonyl (where the aryl group is optionally substituted).

Alkenyl and alkynyl moieties can be in the form of straight or branched chains, and the alkenyl moieties, where appropriate, can be of either the (E)- or (Z)-configuration. Examples are vinyl, allyl and propargyl.

When present, the optional substituents on alkenyl or alkynyl include those optional substituents given above for an alkyl moiety.

In the context of this specification acyl is optionally substituted C_{1-6} alkylcarbonyl (for example acetyl), optionally substituted C_{2-6} alkenylcarbonyl, optionally substituted C_{2-6} alkynylcarbonyl, optionally substituted arylcarbonyl (for example benzoyl) or optionally substituted heteroarylcarbonyl.

Halogen is fluorine, chlorine, bromine or iodine.

Haloalkyl groups are alkyl groups which are substituted with one or more of the same or different halogen atoms and are, for example, CF_3, CF_2Cl, CF_3CH_2 or CHF_2CH_2.

In the context of the present specification the terms "aryl" and "aromatic ring system" refer to ring systems which may be mono-, bi- or tricyclic. Examples of such rings include phenyl, naphthalenyl, anthracenyl, indenyl or phenanthrenyl. A preferred aryl group is phenyl. In addition, the terms “heteroaryl” , "heteroaromatic ring” or “heteroaromatic ring system" refer to an aromatic ring system containing at least one heteroatom and consisting either of a single ring or of two or more fused rings. Preferably, single rings will contain up to three and bicyclic systems up to four heteroatoms which will preferably be chosen from nitrogen, oxygen and sulphur. Examples of such groups include furyl, thienyl, pyrrolyl, pyrazolyl, imidazolyl, 1,2,3-triazolyl, 1,2,4-triazolyl, oxazolyl, isoxazolyl, thiazolyl, isothiazolyl, 1,2,3-oxadiazolyl, 1,2,4-oxadiazolyl, 1,3,4-oxadiazolyl, 1,2,5-oxadiazolyl,

1,2,3-thiadiazolyl, 1,2,4-thiadiazolyl, 1,3,4-thiadiazolyl, 1,2,5-thiadiazolyl, pyridyl, pyrimidinyl, pyridazinyl, pyrazinyl, 1,2,3-triazinyl, 1,2,4-triazinyl, 1,3,5-triazinyl, benzofuryl, benzisofuryl, benzothienyl, benzisothienyl, indolyl, isoindolyl, indazolyl, benzothiazolyl, benzisothiazolyl, benzoxazolyl, benzisoxazolyl, benzimidazolyl, 2,1,3-benzoxadiazole quinolinyl, isoquinolinyl, cinnolinyl, phthalazinyl, quinazolinyl, quinoxalinyl, naphthyridinyl, benzotriazinyl, purinyl, pteridinyl and indolizinyl. Preferred examples of heteroaromatic radicals include pyridyl, pyrimidyl, triazinyl, thienyl, furyl, oxazolyl, isoxazolyl, 2,1,3-benzoxadiazole and thiazolyl.

The terms heterocycle and heterocyclyl refer to a non-aromatic ring containing up to 10 atoms including one or more (preferably one or two) heteroatoms selected from O, S and N. Examples of such rings include 1,3-dioxolane, tetrahydrofuran and morpholine.

When present, the optional substituents on heterocyclyl include C_{1-6} alkyl and C_{1-6} haloalkyl as well as those optional substituents given above for an alkyl moiety.

Cycloalkyl includes cyclopropyl, cyclopentyl and cyclohexyl.

Cycloalkenyl includes cyclopentenyl and cyclohexenyl.

When present, the optional substituents on cycloalkyl or cycloalkenyl include C_{1-3} alkyl as well as those optional substituents given above for an alkyl moiety.

Carbocyclic rings include aryl, cycloalkyl and cycloalkenyl groups.

When present, the optional substituents on aryl or heteroaryl are selected independently, from halogen, nitro, cyano, NCS-, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy-(C_{1-6})alkyl, C_{2-6} alkenyl, C_{2-6} haloalkenyl, C_{2-6} alkynyl, C_{3-7} cycloalkyl (itself optionally substituted with C_{1-6} alkyl or halogen), C_{5-7} cycloalkenyl (itself optionally substituted with C_{1-6} alkyl or halogen), hydroxy, C_{1-10} alkoxy, C_{1-10} alkoxy(C_{1-10})alkoxy, tri(C_{1-4})alkyl-silyl(C_{1-6})alkoxy, C_{1-6} alkoxycarbonyl(C_{1-10})alkoxy, C_{1-10} haloalkoxy, aryl(C_{1-4})alkoxy (where the aryl group is optionally substituted with halogen or C_{1-6} alkyl), C_{3-7} cycloalkyloxy (where the cycloalkyl group is optionally substituted with C_{1-6} alkyl or halogen), C_{2-10} alkenyloxy, C_{2-10} alkynyloxy, SH, C_{1-10} alkylthio, C_{1-10} haloalkylthio, aryl(C_{1-4})alkylthio C_{3-7} cycloalkylthio (where the cycloalkyl group is optionally substituted with C_{1-6} alkyl or halogen), tri(C_{1-4})-alkylsilyl(C_{1-6})alkylthio, arylthio, C_{1-6} alkylsulfonyl, C_{1-6} haloalkylsulfonyl, C_{1-6} alkylsulfinyl, C_{1-6} haloalkylsulfinyl, arylsulfonyl, tri(C_{1-4})alkylsilyl,

aryldi(C_{1-4})-alkylsilyl, (C_{1-4})alkyldiarylsilyl, triarylsilyl, C_{1-10} alkylcarbonyl, HO_2C, C_{1-10} alkoxycarbonyl, aminocarbonyl, C_{1-6} alkylaminocarbonyl, di(C_{1-6} alkyl)-aminocarbonyl, N-(C_{1-3} alkyl)-N-(C_{1-3} alkoxy)aminocarbonyl, C_{1-6} alkylcarbonyloxy, arylcarbonyloxy, di(C_{1-6})alkylamino-carbonyloxy, aryl (itself optionally substituted with C_{1-6} alkyl or halogen), heteroaryl (itself optionally substituted with C_{1-6} alkyl or halogen), heterocyclyl (itself optionally substituted with C_{1-6} alkyl or halogen), aryloxy (where the aryl group is optionally substituted with C_{1-6} alkyl or halogen), heteroaryloxy (where the heteroaryl group is optionally substituted with C_{1-6} alkyl or halogen), heterocyclyloxy (where the heterocyclyl group is optionally substituted with C_{1-6} alkyl or halogen), amino, C_{1-6} alkylamino, di(C_{1-6})alkylamino, C_{1-6} alkylcarbonylamino, N-(C_{1-6})alkylcarbonyl-N-(C_{1-6})alkylamino, arylcarbonyl, (where the aryl group is itself optionally substituted with halogen or C_{1-6} alkyl) or two adjacent positions on an aryl or heteroaryl system may be cyclised to form a 5, 6 or 7 membered carbocyclic or heterocyclic ring, itself optionally substituted with halogen or C_{1-6} alkyl. Further substituents for aryl or heteroaryl include aryl carbonyl amino (where the aryl group is substituted by C_{1-6} alkyl or halogen), (C_{1-6})alkyloxycarbonylamino (C_{1-6})alkyloxycarbonyl-N-(C_{1-6})alkylamino, aryloxycarbonylamino (where the aryl group is substituted by C_{1-6} alkyl or halogen), aryloxycarbonyl-N-(C_{1-6})alkylamino, (where the aryl group is substituted by C_{1-6} alkyl or halogen), arylsulphonylamino (where the aryl group is substituted by C_{1-6} alkyl or halogen), arylsulphonyl-N-(C_{1-6})alkylamino (where the aryl group is substituted by C_{1-6} alkyl or halogen), aryl-N-(C_{1-6})alkylamino (where the aryl group is substituted by C_{1-6} alkyl or halogen), arylamino (where the aryl group is substituted by C_{1-6} alkyl or halogen), heteroaryl amino (where the heteroaryl group is substituted by C_{1-6} alkyl or halogen), heterocyclylamino (where the heterocyclyl group is substituted by C_{1-6} alkyl or halogen), aminocarbonylamino, C_{1-6} alkylaminocarbonyl amino, di(C_{1-6})alkylaminocarbonyl amino, arylaminocarbonyl amino where the aryl group is substituted by C_{1-6} alkyl or halogen), aryl-N-(C_{1-6})alkylaminocarbonylamino where the aryl group is substituted by C_{1-6} alkyl or halogen), C_{1-6} alkylaminocarbonyl-N-(C_{1-6})alkyl amino, di(C_{1-6})alkylaminocarbonyl-N-(C_{1-6})alkyl amino, arylaminocarbonyl-N-(C_{1-6})alkyl amino where the aryl group is substituted by C_{1-6} alkyl or halogen) and aryl-N-(C_{1-6})alkylaminocarbonyl-N-(C_{1-6})alkyl amino where the aryl group is substituted by C_{1-6} alkyl or halogen).

For substituted phenyl moieties, heterocyclyl and heteroaryl groups it is preferred that one or more substituents are independently selected from halogen, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy(C_{1-6})alkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} alkylthio, C_{1-6} haloalkylthio, C_{1-6} alkylsulfinyl, C_{1-6} haloalkylsulfinyl, C_{1-6} alkylsulfonyl, C_{1-6} haloalkylsulfonyl, C_{2-6} alkenyl, C_{2-6} haloalkenyl, C_{2-6} alkynyl, C_{3-7} cycloalkyl, nitro, cyano, CO_2H, C_{1-6} alkylcarbonyl, C_{1-6} alkoxycarbonyl, $R^{25}R^{26}N$ or $R^{27}R^{28}NC(O)$; wherein R^{25}, R^{26}, R^{27} and R^{28} are, independently, hydrogen or C_{1-6} alkyl. Further preferred substituents are aryl and heteroaryl groups.

Haloalkenyl groups are alkenyl groups which are substituted with one or more of the same or different halogen atoms.

It is to be understood that dialkylamino substituents include those where the dialkyl groups together with the N atom to which they are attached form a five, six or seven-membered heterocyclic ring which may contain one or two further heteroatoms selected from O, N or S and which is optionally substituted by one or two independently selected (C_{1-6})alkyl groups. When heterocyclic rings are formed by joining two groups on an N atom, the resulting rings are suitably pyrrolidine, piperidine, thiomorpholine and morpholine each of which may be substituted by one or two independently selected (C_{1-6}) alkyl groups.

Preferably the optional substituents on an alkyl moiety include one or more of halogen, nitro, cyano, HO_2C, C_{1-10} alkoxy (itself optionally substituted by C_{1-10} alkoxy), aryl(C_{1-4})alkoxy, C_{1-10} alkylthio, C_{1-10} alkylcarbonyl, C_{1-10} alkoxycarbonyl, C_{1-6} alkylaminocarbonyl, di(C_{1-6} alkyl)aminocarbonyl, (C_{1-6})alkylcarbonyloxy, optionally substituted phenyl, heteroaryl, aryloxy, arylcarbonyloxy, heteroaryloxy, heterocyclyl, heterocyclyloxy, C_{3-7} cycloalkyl (itself optionally substituted with (C_{1-6})alkyl or halogen), C_{3-7} cycloalkyloxy, C_{5-7} cycloalkenyl, C_{1-6} alkylsulfonyl, C_{1-6} alkylsulfinyl, tri(C_{1-4})alkylsilyl, tri(C_{1-4})alkylsilyl(C_{1-6})alkoxy, aryldi(C_{1-4})alkylsilyl, (C_{1-4})alkyldiarylsilyl and triarylsilyl.

Preferably the optional substituents on alkenyl or alkynyl include one or more of halogen, aryl and C_{3-7} cycloalkyl.

A preferred optional substituent for heterocyclyl is C_{1-6} alkyl.

Preferably the optional substituents for cycloalkyl include halogen, cyano and C_{1-3} alkyl.

Preferably the optional substituents for cycloalkenyl include C_{1-3} alkyl, halogen and cyano.

Preferably Y is a single bond, C=O or S(O)m where m is 0, 1 or 2.

More preferably Y is a single bond, C=O or SO_2.

Yet more preferably Y is a single bond or C=O.

Most preferably Y is C=O.

Preferably R^1 is hydrogen, C_{1-6} alkyl, C_{1-6} cyanoalkyl, C_{1-6} haloalkyl, C_{3-7} cycloalkyl(C_{1-4})alkyl, C_{1-6} alkoxy(C_{1-6})alkyl, heteroaryl(C_{1-6})alkyl (wherein the heteroaryl group may be optionally substituted by halo, nitro, cyano, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} alkylsulfonyl, C_{1-6} alkylsulfinyl, C_{1-6} alkylthio, C_{1-6} alkoxycarbonyl, C_{1-6} alkylcarbonylamino, arylcarbonyl, or two adjacent positions on the heteroaryl system may be cyclised to form a 5, 6 or 7 membered carbocyclic or heterocyclic ring, itself optionally substituted with halogen), aryl(C_{1-6})alkyl (wherein the aryl group may be optionally substituted by halo, nitro, cyano, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} alkylsulfonyl, C_{1-6} alkylsulfinyl, C_{1-6} alkylthio, C_{1-6} alkoxycarbonyl, C_{1-6} alkylcarbonylamino, arylcarbonyl, or two adjacent positions on the aryl system may be cyclised to form a 5, 6 or 7 membered carbocyclic or heterocyclic ring, itself optionally substituted with halogen), C_{1-6} alkylcarbonylamino(C_{1-6})alkyl, aryl (which may be optionally substituted by halo, nitro, cyano, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} alkylsulfonyl, C_{1-6} alkylsulfinyl, C_{1-6} alkylthio, C_{1-6} alkoxycarbonyl, C_{1-6} alkylcarbonylamino, arylcarbonyl, or two adjacent positions on the aryl system may be cyclised to form a 5, 6 or 7 membered carbocyclic or heterocyclic ring, itself optionally substituted with halogen), heteroaryl (which may be optionally substituted by halo, nitro, cyano, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} alkylsulfonyl, C_{1-6} alkylsulfinyl, C_{1-6} alkylthio, C_{1-6} alkoxycarbonyl, C_{1-6} alkylcarbonylamino, arylcarbonyl, or two adjacent positions on the heteroaryl system may be cyclised to form a 5, 6 or 7 membered carbocyclic or heterocyclic ring, itself optionally substituted with halogen), C_{1-6} alkoxy, C_{1-6} haloalkoxy, phenoxy (wherein the phenyl group is optionally substituted by halogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, CN, NO_2, aryl, heteroaryl, amino or dialkylamino), heteroaryloxy (optionally substituted by halo, nitro, cyano, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy or C_{1-6}

haloalkoxy), heterocyclyloxy (optionally substituted by halo, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy or C_{1-6} haloalkoxy), cyano, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-6} cycloalkyl, C_{5-7} cycloalkenyl, heterocyclyl (optionally substituted by halo, nitro, cyano, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy or C_{1-6} haloalkoxy), C_{1-6} alkylthio, C_{1-6} haloalkylthio or $NR^{13}R^{14}$ where R^{13} and R^{14} are independently hydrogen, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy(C_{1-6})alkyl, phenyl (which may be optionally substituted by halogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, CN, NO_2, aryl, heteroaryl, amino, dialkylamino or C_{1-4} alkoxycarbonyl), phenyl (C_{1-6})alkyl (wherein the phenyl group may be optionally substituted by halogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, CN, NO_2, aryl, heteroaryl, amino, dialkylamino, C_{1-6} alkylsulfonyl, C_{1-6} alkoxycarbonyl, or two adjacent positions on the phenyl ring may be cyclised to form a 5, 6 or 7 membered carbocyclic or heterocyclic ring, itself optionally substituted with halogen), heteroaryl (C_{1-6})alkyl (wherein the heteroaryl group may be optionally substituted by halo, nitro, cyano, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} alkylsulfonyl, C_{1-6} alkylsulfinyl, C_{1-6} alkylthio, C_{1-6} alkoxycarbonyl, C_{1-6} alkylcarbonylamino, arylcarbonyl, or two adjacent positions on the heteroaryl system may be cyclised to form a 5, 6 or 7 membered carbocyclic or heterocyclic ring, itself optionally substituted with halogen) or heteroaryl (which may be optionally substituted by halo, nitro, cyano, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy or C_{1-6} haloalkoxy, C_{1-4} alkoxycarbonyl C_{1-6} alkylcarbonylamino, phenyloxycarbonylamino (wherein the phenyl group is optionally substituted by halogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, CN, NO_2, aryl, heteroaryl, amino or dialkylamino), amino, C_{1-6} alkylamino or phenylamino (wherein the phenyl group is optionally substituted halogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, CN, NO_2, aryl, heteroaryl, amino or dialkylamino)).

More preferably R^1 is C_{1-6} alkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy(C_{1-6})alkyl, heteroaryl(C_{1-3})alkyl (wherein the heteroaryl group may be optionally substituted by halo, nitro, cyano, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} alkylsulfonyl, C_{1-6} alkoxycarbonyl, or two adjacent positions on the heteroaryl system may be cyclised to form a 5, 6 or 7 membered carbocyclic or heterocyclic ring, itself optionally substituted with halogen), phenyl(C_{1-3})alkyl (wherein the phenyl group may be optionally substituted by halogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, CN, NO_2, aryl, heteroaryl, amino,

dialkylamino, C_{1-6} alkylsulfonyl, C_{1-6} alkoxycarbonyl, or two adjacent positions on the phenyl ring may be cyclised to form a 5, 6 or 7 membered carbocyclic or heterocyclic ring, itself optionally substituted with halogen), phenyl (which may be optionally substituted by halogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, CN, NO_2, aryl, heteroaryl, amino, dialkylamino, C_{1-6} alkylsulfonyl, C_{1-6} alkoxycarbonyl, or two adjacent positions on the phenyl ring may be cyclised to form a 5, 6 or 7 membered carbocyclic or heterocyclic ring, itself optionally substituted with halogen), heteroaryl (which may be optionally substituted by halo, nitro, cyano, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} alkylsulfonyl, C_{1-6} alkoxycarbonyl, or two adjacent positions on the heteroaryl system may be cyclised to form a 5, 6 or 7 membered carbocyclic or heterocyclic ring, itself optionally substituted with halogen), C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, heterocyclyl (optionally substituted by halo, cyano, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy or C_{1-6} haloalkoxy), C_{1-6} alkylthio, C_{1-6} haloalkylthio or $NR^{13}R^{14}$ where R^{13} and R^{14} are independently hydrogen, C_{1-6} alkyl or C_{1-6} haloalkyl, C_{1-6} alkoxy(C_{1-6})alkyl, C_{2-6} alkylcarbonyl, phenylcarbonyl, (where the phenyl is optionally substituted by halogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, CN, NO_2, aryl, heteroaryl, amino or dialkylamino), phenyl(C_{1-3})alkyl (wherein the phenyl group may be optionally substituted by halogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, CN, NO_2, aryl, heteroaryl, amino, dialkylamino, C_{1-6} alkylsulfonyl, C_{1-6} alkoxycarbonyl, or two adjacent positions on the phenyl ring may be cyclised to form a 5, 6 or 7 membered carbocyclic or heterocyclic ring, itself optionally substituted with halogen) or heteroaryl(C_{1-3})alkyl (wherein the heteroaryl group may be optionally substituted by halo, nitro, cyano, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} alkylsulfonyl, C_{1-6} alkylsulfinyl, C_{1-6} alkylthio, C_{1-6} alkoxycarbonyl, C_{1-6} alkylcarbonylamino, arylcarbonyl, or two adjacent positions on the heteroaryl system may be cyclised to form a 5, 6 or 7 membered carbocyclic or heterocyclic ring, itself optionally substituted with halogen).

Even more preferably R^1 is C_{1-6} alkyl, C_{1-6} haloalkyl, heteroaryl(C_{1-3})alkyl (wherein the heteroaryl group may be optionally substituted by halo, cyano, C_{1-6} alkyl, C_{1-6} haloalkyl and where the heteroaryl group is a thiazole, pyridine, pyrimidine, pyrazine or pyridazine ring), heteroaryl (optionally substituted by halo, cyano, C_{1-6} alkyl, C_{1-6} haloalkyl and where

the heteroaryl group is a pyridine, pyrimidine, 2,1,3-benzoxadiazole, pyrazine or pyridazine ring), C_{1-6} alkoxy, C_{1-6} alkoxy(C_{1-6})alkyl, C_{1-6} alkylamino, C_{1-6} alkyoxy(C_{1-6})alkylamino or heteroaryl(C_{1-3})alkylamino (wherein the heteroaryl group may be optionally substituted by halo, cyano, C_{1-6} alkyl, C_{1-6} haloalkyl and where the heteroaryl group is a thiazole, pyridine, pyrimidine, pyrazine or pyridazine ring).

Most preferably R^1 is pyridyl (optionally substituted by halo, C_{1-3} alkyl or C_{1-3} haloalkyl) especially halo-substituted pyridyl.

It is preferred that R^2 and R^3 are independently hydrogen, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy or cyano.

More preferably R^2 and R^3 are independently hydrogen, halogen, C_{1-2} alkyl, C_{1-2} haloalkyl, C_{1-2} alkoxy, cyano.

Even more preferably R^2 and R^3 are independently hydrogen or C_{1-4} alkyl.

Yet more preferably R^2 and R^3 are independently hydrogen or methyl.

Most preferably R^2 and R^3 are both hydrogen.

Preferably each R^4 is independently halogen, cyano, C_{1-8} alkyl, C_{1-8} haloalkyl, C_{1-6} cyanoalkyl, C_{1-6} alkoxy(C_{1-6})alkyl, C_{3-7} cycloalkyl(C_{1-6})alkyl, C_{5-6} cycloalkenyl(C_{1-6})alkyl, C_{3-6} alkenyloxy(C_{1-6})alkyl, C_{3-6} alkynyloxy(C_{1-6})alkyl, aryloxy(C_{1-6})alkyl, C_{1-6} carboxyalkyl, C_{1-6} alkylcarbonyl(C_{1-6})alkyl, C_{2-6} alkenylcarbonyl(C_{1-6})alkyl, C_{2-6} alkynylcarbonyl(C_{1-6})-alkyl, C_{1-6} alkoxycarbonyl(C_{1-6})alkyl, C_{3-6} alkenyloxycarbonyl(C_{1-6})alkyl, C_{3-6} alkynyloxycarbonyl(C_{1-6})alkyl, aryloxycarbonyl(C_{1-6})alkyl, C_{1-6} alkylthio(C_{1-6})alkyl, C_{1-6} alkylsulfinyl(C_{1-6})alkyl, C_{1-6} alkylsulfonyl(C_{1-6})alkyl, aminocarbonyl(C_{1-6})alkyl, C_{1-6} alkylaminocarbonyl(C_{1-6})alkyl, di(C_{1-6})alkylaminocarbonyl(C_{1-6})alkyl, phenyl(C_{1-4})alkyl (wherein the phenyl group is optionally substituted by halogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, CN, NO_2, aryl, heteroaryl, amino or dialkylamino), heteroaryl(C_{1-4})alkyl (wherein the heteroaryl group is optionally substituted by halo, nitro, cyano, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy or C_{1-6} haloalkoxy), heterocyclyl(C_{1-4})alkyl (wherein the heterocyclyl group is optionally substituted by halo, nitro, cyano, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy or C_{1-6} haloalkoxy), C_{2-6} alkenyl, aminocarbonyl(C_{2-6})alkenyl, C_{1-6} alkylaminocarbonyl(C_{2-6})alkenyl, di(C_{1-6})alkylaminocarbonyl(C_{2-6})alkenyl, phenyl(C_{2-4})-alkenyl, (wherein the phenyl group is optionally substituted by halogen, C_{1-4} alkyl, C_{1-4}

alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, CN, NO_2, aryl, heteroaryl, amino or dialkylamino), C_{2-6} alkynyl, trimethylsilyl(C_{2-6})alkynyl, aminocarbonyl(C_{2-6})alkynyl, C_{1-6} alkylaminocarbonyl(C_{2-6})alkynyl, di(C_{1-6})alkylaminocarbonyl(C_{2-6})alkynyl, C_{1-6} alkoxycarbonyl, C_{3-7} cycloalkyl, C_{3-7} halocycloalkyl, C_{3-7} cyanocycloalkyl, C_{1-3} alkyl(C_{3-7})-cycloalkyl, C_{1-3} alkyl(C_{3-7})halocycloalkyl,phenyl (optionally substituted by halogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, CN, NO_2, aryl, heteroaryl, amino or dialkylamino), heteroaryl (optionally substituted by halo, nitro, cyano, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy or C_{1-6} haloalkoxy), heterocyclyl (wherein the heterocyclyl group is optionally substituted by halo, nitro, cyano, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy or C_{1-6} haloalkoxy), or 2 adjacent groups R^4 together with the carbon atoms to which they are attached form a 4, 5, 6 or 7 membered carbocylic or heterocyclic ring which may be optionally substituted by halogen, C_{1-8} alkoxy, C_{1-6} haloalkoxy, phenoxy (optionally substituted by halo, nitro, cyano, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy or C_{1-6} haloalkoxy), heteroaryloxy (optionally substituted by halo, nitro, cyano, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy or C_{1-6} haloalkoxy), C_{1-8} alkylthio or $R^{19}R^{20}N$ where R^{19} and R^{20} are, independently, hydrogen, C_{1-8} alkyl, C_{3-7} cycloalkyl, C_{3-6} alkenyl, C_{3-6} alkynyl, C_{2-6} haloalkyl, C_{1-6} alkoxycarbonyl or R^{19} and R^{20} together with the N atom to which they are attached form a five, six or seven-membered heterocyclic ring which may contain one or two further heteroatoms selected from O, N or S and which may be optionally substituted by one or two C_{1-6} alkyl groups; n is 0, 1, 2 or 3.

More preferably each R^4 is independently halogen, cyano, C_{1-8} alkyl, C_{1-8} haloalkyl, C_{1-8} cyanoalkyl, C_{1-6} alkoxy(C_{1-6})alkyl, C_{2-6} alkynyl, trimethylsilyl(C_{2-6})alkynyl, C_{1-6} alkoxycarbonyl, C_{3-7} cycloalkyl, C_{1-3} alkyl (C_{3-7}) cycloalkyl, phenyl (optionally substituted by halogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, CN, NO_2, aryl, heteroaryl, amino or dialkylamino), heterocyclyl (optionally substituted by halo, nitro, cyano, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy or C_{1-6} haloalkoxy), C_{1-8} alkoxy, C_{1-6} haloalkoxy, phenoxy (optionally substituted by halogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, CN, NO_2, aryl, heteroaryl, amino or dialkylamino), heteroaryloxy (optionally substituted by halo, nitro, cyano, C_{1-3} alkyl, C_{1-3} haloalkyl, C_{1-3} alkoxy or C_{1-3} haloalkoxy), di(C_{1-8})alkylamino, or 2 adjacent groups R^4 together with the carbon atoms to which they are

attached form a 4, 5, 6 or 7 membered carbocylic or heterocyclic ring which may be optionally substituted by halogen; n is 0, 1, 2 or 3.

Even more preferably each R^4 is independently halogen, cyano, C_{1-8} alkyl, C_{1-8} haloalkyl, C_{1-8} cyanoalkyl, C_{1-6} alkoxy(C_{1-6})alkyl, C_{2-6} alkynyl, heterocyclyl (optionally substituted by C_{1-6} alkyl), C_{1-8} alkoxy, C_{1-6} haloalkoxy, phenoxy (optionally substituted by halo, cyano, C_{1-3} alkyl or C_{1-3} haloalkyl), heteroaryloxy (optionally substituted by halo, cyano, C_{1-3} alkyl or C_{1-3} haloalkyl), di(C_{1-8})alkylamino or 2 adjacent groups R^4 together with the carbon atoms to which they are attached form a 4, 5, 6 or 7 membered carbocylic or heterocyclic ring which may be optionally substituted by halogen; n is 0, 1, 2 or 3.

Yet more preferably each R^4 is independently fluoro, chloro, bromo, cyano, C_{1-4} alkyl, C_{1-4} haloalkyl, C_{1-4} cyanoalkyl or C_{1-3} alkoxy(C_{1-3})alkyl; n is 0, 1 or 2.

Most preferably each R^4 is independently fluoro, chloro, bromo, C_{1-4} alkyl or C_{1-4} haloalkyl; n is 1 or 2.

Preferably R^8 is C_{1-10} alkyl, C_{1-10} haloalkyl, aryl(C_{1-6})alkyl (wherein the aryl group is optionally substituted by halogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, CN, NO_2, aryl, heteroaryl, amino or dialkylamino), heteroaryl(C_{1-6})alkyl (wherein the heteroaryl group is optionally substituted by halogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, CN, NO_2, aryl, heteroaryl, amino or dialkylamino), arylcarbonyl-(C_{1-6})alkyl (wherein the aryl group may be optionally substituted by halogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, CN, NO_2, aryl, heteroaryl, amino or dialkylamino and the alkyl group may be optionally substituted by aryl), C_{2-8} alkenyl, C_{2-8} haloalkenyl, aryl(C_{2-6})-alkenyl (wherein the aryl group is optionally substituted halogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, CN, NO_2, aryl, heteroaryl, amino or dialkylamino, C_{1-6} alkoxycarbonyl, or two adjacent substituents can cyclise to form a 5, 6 or 7 membered carbocyclic or heterocyclic ring), heteroaryl(C_{2-6})-alkenyl (wherein the heteroaryl group is optionally substituted halogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, CN, NO_2, aryl, heteroaryl, amino or dialkylamino, C_{1-6} alkoxycarbonyl, or two adjacent substituents can cyclise to form a 5, 6 or 7 membered carbocyclic or heterocyclic ring), C_{2-6} alkynyl, phenyl(C_{2-6})alkynyl (wherein the phenyl group is optionally substituted by halogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, CN, NO_2, aryl, heteroaryl, amino or

dialkylamino), C_{3-7} cycloalkyl, C_{1-6} alkoxycarbonyl, C_{1-6} alkylcarbonyl, C_{1-6} haloalkylcarbonyl or aryl(C_{2-6})alkenylcarbonyl (wherein the aryl group may be optionally substituted halogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, CN, NO_2, aryl, heteroaryl, amino or dialkylamino), or $-C(R^{51})(R^{52})$-$[CR^{53}=CR^{54}]z$-R^{55} where z is 1 or 2, R^{51} and R^{52} are each independently H, halo or C_{1-2} alkyl, R^{53} and R^{54} are each independently H, halogen, C_{1-4} alkyl or C_{1-4} haloalkyl and R^{55} is optionally substituted aryl or optionally substituted heteroaryl.

More preferably R^8 is phenyl(C_{1-4})alkyl (wherein the phenyl group is optionally substituted by halogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, CN, NO_2, aryl, heteroaryl, amino or dialkylamino), heteroaryl(C_{1-6})alkyl (wherein the heteroaryl group is optionally substituted halogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, CN, NO_2, aryl, heteroaryl, amino or dialkylamino), phenyl(C_{2-6})alkenyl (wherein the phenyl group is optionally substituted by halogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, CN, NO_2, aryl, heteroaryl, amino or dialkylamino), heteroaryl(C_{2-6})alkenyl (wherein the heteroaryl group is optionally substituted by halogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, CN, NO_2, aryl, heteroaryl, amino or dialkylamino) or phenyl(C_{2-6})alkynyl (wherein the phenyl group is optionally substituted by halogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, CN, NO_2, aryl, heteroaryl, amino or dialkylamino, or $-C(R^{51})(R^{52})$-$[CR^{53}=CR^{54}]z$-R^{55} where z is 1 or 2, R^{51} and R^{52} are each independently H, halo or C_{1-2} alkyl, R^{53} and R^{54} are each independently H, halogen, C_{1-4} alkyl or C_{1-4} haloalkyl and R^{55} is optionally substituted aryl or optionally substituted heteroaryl.

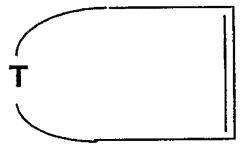
Most preferably R^8 is $-C(R^{51})(R^{52})$-$[CR^{53}=CR^{54}]z$-R^{55} where z is 1 or 2, preferably 1, R^{51} and R^{52} are each independently H, halo or C_{1-2} alkyl, R^{53} and R^{54} are each independently H, halogen, C_{1-4} alkyl or C_{1-4} haloalkyl and R^{55} is phenyl substituted by halogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, CN, NO_2, aryl, heteroaryl, amino or dialkylamino or heteroaryl substituted by halogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, CN, NO_2, aryl, heteroaryl, amino or dialkylamino.

R^{51} and R^{52} are preferably hydrogen.

R^{53} and R^{54} are preferably hydrogen or halogen, especially hydrogen.

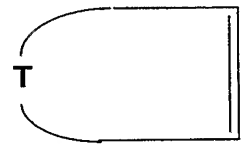
R^{55} is preferably phenyl substituted with one to three substituents selected from halogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, CN, NO_2, aryl, heteroaryl, amino or dialkylamino.

It is preferred that that ring



a 5 or 6 membered heteroaromatic ring wherein the ring members are each independently CH, S, N, NR^4, O, or CR^4 provided that at least one ring member is other than CH or CR4 and that there are no more than one O or S atoms present in the ring.

More preferably the ring



is a pyridine, pyrimidine, pyrazine, pyridazine, triazine, furan, thiophene, pyrrole, imidazole, pyrazole, oxazole, thiazole, isoxazole, isothiazole, [1,2,3]triazole, [1,2,3]oxadiazole or [1,2,3]thiadiazole.

Preferably each Ra is independently hydrogen, halo, cyano, C_{1-3} alkyl, hydroxy or two Ra groups together with the carbon atom to which they are attached form a carbonyl group

More preferably each Ra is independently hydrogen, fluoro, methyl, hydroxy or two Ra groups together with the carbon atom to which they are attached form a carbonyl group

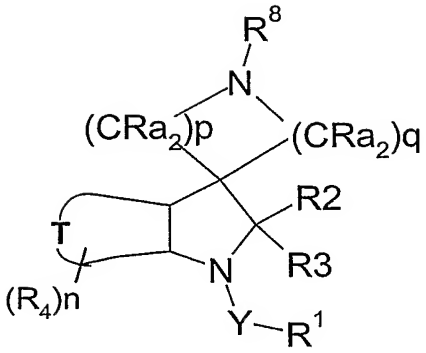
Most preferably each Ra is hydrogen.

Preferably p is 1, 2 or 3 and q is 1, 2 or 3 and p+q is 3, 4 or 5.

More preferably p is 1 or 2 and q is 2.

Most preferably p and q are both 2.

Certain compounds of formula I are novel. One group of novel compounds is that of formula I'



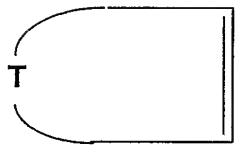
(I')

wherein Y is C=O, C=S;

R^1 is hydrogen, optionally substituted alkyl, optionally substituted alkoxycarbonyl, optionally substituted alkylcarbonyl, aminocarbonyl, optionally substituted alkylaminocarbonyl, optionally substituted dialkylaminocarbonyl, optionally substituted aryl, optionally substituted heteroaryl, optionally substituted alkoxy, optionally substituted aryloxy, optionally substituted heteroaryloxy, optionally substituted heterocyclyloxy, cyano, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted cycloalkenyl, formyl, optionally substituted heterocyclyl, optionally substituted alkylthio, NO or $NR^{13}R^{14}$ where R^{13} and R^{14} are independently hydrogen, COR^{15}, optionally substituted alkyl, optionally substituted aryl, optionally substituted heteroaryl, optionally substituted heterocyclyl or R^{13} and R^{14} together with the N atom to which they are attached form a group $-N=C(R^{16})-NR^{17}R^{18}$; R^{15} is H, optionally substituted alkyl, optionally substituted alkoxy, optionally substituted aryl, optionally substituted aryloxy optionally substituted heteroaryl, optionally substituted heteroaryloxy or $NR^{19}R^{20}$; R^{16}, R^{17} and R^{18} are each independently H or lower alkyl; R^{19} and R^{20} are independently optionally substituted alkyl, optionally substituted aryl or optionally substituted heteroaryl;

R^2 and R^3 are independently hydrogen, halogen, cyano, optionally substituted alkyl, optionally substituted alkoxy or optionally substituted aryl;

the ring



is a 5 or 6 membered heteroaromatic ring;

each R^4 is independently halogen, nitro, cyano, optionally substituted C_{1-8} alkyl, optionally substituted C_{2-6} alkenyl, optionally substituted C_{2-6} alkynyl, optionally substituted alkoxycarbonyl, optionally substituted alkylcarbonyl, optionally substituted alkylaminocarbonyl, optionally substituted dialkylaminocarbonyl, optionally substituted C_{3-7} cycloalkyl, optionally substituted aryl, optionally substituted heteroaryl, optionally substituted heterocyclyl, optionally substituted alkoxy, optionally substituted aryloxy, optionally substituted heteroaryloxy, optionally substituted alkylthio or $R^{21}R^{22}N$ where R^{21} and R^{22} are, independently, hydrogen, C_{1-8} alkyl, C_{3-7} cycloalkyl, C_{3-6} alkenyl, C_{3-6} alkynyl, C_{3-7} cycloalkyl(C_{1-4})alkyl, C_{2-6} haloalkyl, C_{1-6} alkoxy(C_{1-6})alkyl, C_{1-6} alkoxycarbonyl or R^{21} and R^{22} together with the N atom to which they are attached form a five, six or seven-membered heterocyclic ring which may contain one or two further heteroatoms selected from O, N or S and which may be optionally substituted by one or two C_{1-6} alkyl groups, or 2 adjacent groups R^4 together with the carbon atoms to which they are attached form a 4, 5, 6,or 7 membered carbocyclic or heterocyclic ring which may be optionally substituted by halogen; n is 0, 1, 2 or 3;

each Ra is independently hydrogen, halogen, hydroxy, cyano, optionally substituted C_{1-8} alkyl, optionally substituted C_{2-6} alkenyl, optionally substituted C_{2-6} alkynyl, optionally substituted alkoxycarbonyl, optionally substituted alkylcarbonyl, optionally substituted alkylaminocarbonyl, optionally substituted dialkylaminocarbonyl, optionally substituted C_{3-7} cycloalkyl, optionally substituted aryl, optionally substituted heteroaryl, optionally substituted heterocyclyl, optionally substituted alkoxy, optionally substituted aryloxy, optionally substituted heteroaryloxy, optionally substituted alkylthio, optionally substituted arylthio or $R^{23}R^{24}N$ where R^{23} and R^{24} are, independently, hydrogen, C_{1-8} alkyl, C_{3-7} cycloalkyl, C_{3-6} alkenyl, C_{3-6} alkynyl, C_{3-7} cycloalkyl(C_{1-4})alkyl, C_{2-6} haloalkyl, C_{1-6} alkoxy(C_{1-6})alkyl, C_{1-6} alkoxycarbonyl or R^{23} and R^{24} together with the N atom to which they

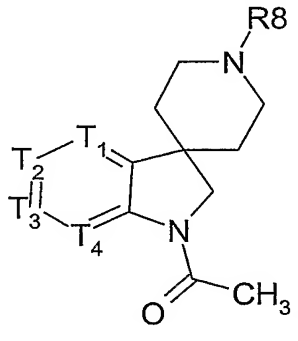
are attached form a five, six or seven-membered heterocyclic ring which may contain one or two further heteroatoms selected from O, N or S and which may be optionally substituted by one or two C_{1-6} alkyl groups, or two Ra groups attached to the same carbon atom are =O or two Ra groups attached to adjacent carbon atoms form a bond, or two Ra groups together with the carbon atom to which they are attached form a three- to seven-membered ring, that may be saturated or unsaturated, and that may contain one or two hetero atoms selected from the group consisting of N, O and S, and which may be optionally substituted by one or two C_{1-6} alkyl groups; or two Ra groups together form a group $-CH_2-$, $-CH=CH-$ or $-CH_2CH_2$;

p is 0, 1, 2, 3, 4, 5 or 6; q is 0, 1, 2, 3, 4, 5 or 6 provided that p+q is 1, 2, 3, 4, 5 or 6;

R^8 is optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted aryl, optionally substituted alkoxy, optionally substituted aryloxy, optionally substituted alkoxycarbonyl, optionally substituted alkylcarbonyl or optionally substituted alkenylcarbonyl; or salts or N-oxides thereof.

The compounds in Tables I- CLXVIII below illustrate the compounds of the invention.

Table I provides 575 compounds of formula Ia



(Ia)

wherein T1 is N, T2 is CR^{4a}, T3 is CR^{4b}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table 1

Compound No	R^8	R^{4a}	R^{4b}	R^{4c}
I-1	4-chlorobenzyl	CH	CH	CH

I-2	Cinnamyl	CH	CH	CH
I-3	4-chlorocinnamyl	CH	CH	CH
I-4	4-fluorocinnamyl	CH	CH	CH
I-5	4-bromocinnamyl	CH	CH	CH
I-6	4-trifluoromethylcinnamyl	CH	CH	CH
I-7	4-trifluoromethoxycinnamyl	CH	CH	CH
I-8	4-pentafluoroethoxycinnamyl	CH	CH	CH
I-9	4-methoxycinnamyl	CH	CH	CH
I-10	4-ethoxycinnamyl	CH	CH	CH
I-11	4-cyanocinnamyl	CH	CH	CH
I-12	3-(6-chloro-pyridin-3-yl)-allyl	CH	CH	CH
I-13	3-(4-chlorophenyl)-but-2-enyl	CH	CH	CH
I-14	3-(4-chlorophenyl)-3-fluoro-allyl	CH	CH	CH
I-15	3-chloro-4-fluoro-cinnamyl	CH	CH	CH
I-16	3,5-dichloro-cinnamyl	CH	CH	CH
I-17	5-phenyl-penta-2,4-dienyl	CH	CH	CH
I-18	4-isopropyloxycarbonylamino-cinnamyl	CH	CH	CH
I-19	3-naphthalen-2-yl-allyl	CH	CH	CH
I-20	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	CH	CH	CH
I-21	3-(5-chloro-pyridin-2-yl)-allyl	CH	CH	CH
I-22	3-pyridin-4-yl-allyl	CH	CH	CH
I-23	3-(2-Chloro-pyridin-4-yl)-allyl	CH	CH	CH
I-24	4-chlorobenzyl	CF	CH	CH
I-25	Cinnamyl	CF	CH	CH
I-26	4-chlorocinnamyl	CF	CH	CH
I-27	4-fluorocinnamyl	CF	CH	CH
I-28	4-bromocinnamyl	CF	CH	CH
I-29	4-trifluoromethylcinnamyl	CF	CH	CH
I-30	4-trifluoromethoxycinnamyl	CF	CH	CH

I-31	4-pentafluoroethoxycinnamyl	CF	CH	CH
I-32	4-methoxycinnamyl	CF	CH	CH
I-33	4-ethoxycinnamyl	CF	CH	CH
I-34	4-cyanocinnamyl	CF	CH	CH
I-35	3-(6-chloro-pyridin-3-yl)-allyl	CF	CH	CH
I-36	3-(4-chlorophenyl)-but-2-enyl	CF	CH	CH
I-37	3-(4-chlorophenyl)-3-fluoro-allyl	CF	CH	CH
I-38	3-chloro-4-fluoro-cinnamyl	CF	CH	CH
I-39	3,5-dichloro-cinnamyl	CF	CH	CH
I-40	5-phenyl-penta-2,4-dienyl	CF	CH	CH
I-41	4-isopropyloxycarbonylamino-cinnamyl	CF	CH	CH
I-42	3-naphthalen-2-yl-allyl	CF	CH	CH
I-43	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	CF	CH	CH
I-44	3-(5-chloro-pyridin-2-yl)-allyl	CF	CH	CH
I-45	3-pyridin-4-yl-allyl	CF	CH	CH
I-46	3-(2-Chloro-pyridin-4-yl)-allyl	CF	CH	CH
I-47	4-chlorobenzyl	CCl	CH	CH
I-48	Cinnamyl	CCl	CH	CH
I-49	4-chlorocinnamyl	CCl	CH	CH
I-50	4-fluorocinnamyl	CCl	CH	CH
I-51	4-bromocinnamyl	CCl	CH	CH
I-52	4-trifluoromethylcinnamyl	CCl	CH	CH
I-53	4-trifluoromethoxycinnamyl	CCl	CH	CH
I-54	4-pentafluoroethoxycinnamyl	CCl	CH	CH
I-55	4-methoxycinnamyl	CCl	CH	CH
I-56	4-ethoxycinnamyl	CCl	CH	CH
I-57	4-cyanocinnamyl	CCl	CH	CH
I-58	3-(6-chloro-pyridin-3-yl)-allyl	CCl	CH	CH
I-59	3-(4-chlorophenyl)-but-2-enyl	CCl	CH	CH

I-60	3-(4-chlorophenyl)-3-fluoro-allyl	CCl	CH	CH
I-61	3-chloro-4-fluoro-cinnamyl	CCl	CH	CH
I-62	3,5-dichloro-cinnamyl	CCl	CH	CH
I-63	5-phenyl-penta-2,4-dienyl	CCl	CH	CH
I-64	4-isopropyloxycarbonylamino-cinnamyl	CCl	CH	CH
I-65	3-naphthalen-2-yl-allyl	CCl	CH	CH
I-66	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	CCl	CH	CH
I-67	3-(5-chloro-pyridin-2-yl)-allyl	CCl	CH	CH
I-68	3-pyridin-4-yl-allyl	CCl	CH	CH
I-69	3-(2-Chloro-pyridin-4-yl)-allyl	CCl	CH	CH
I-70	4-chlorobenzyl	CBr	CH	CH
I-71	Cinnamyl	CBr	CH	CH
I-72	4-chlorocinnamyl	CBr	CH	CH
I-73	4-fluorocinnamyl	CBr	CH	CH
I-74	4-bromocinnamyl	CBr	CH	CH
I-75	4-trifluoromethylcinnamyl	CBr	CH	CH
I-76	4-trifluoromethoxycinnamyl	CBr	CH	CH
I-77	4-pentafluoroethoxycinnamyl	CBr	CH	CH
I-78	4-methoxycinnamyl	CBr	CH	CH
I-79	4-ethoxycinnamyl	CBr	CH	CH
I-80	4-cyanocinnamyl	CBr	CH	CH
I-81	3-(6-chloro-pyridin-3-yl)-allyl	CBr	CH	CH
I-82	3-(4-chlorophenyl)-but-2-enyl	CBr	CH	CH
I-83	3-(4-chlorophenyl)-3-fluoro-allyl	CBr	CH	CH
I-84	3-chloro-4-fluoro-cinnamyl	CBr	CH	CH
I-85	3,5-dichloro-cinnamyl	CBr	CH	CH
I-86	5-phenyl-penta-2,4-dienyl	CBr	CH	CH
I-87	4-isopropyloxycarbonylamino-cinnamyl	CBr	CH	CH
I-88	3-naphthalen-2-yl-allyl	CBr	CH	CH

I-89	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	CBr	CH	CH
I-90	3-(5-chloro-pyridin-2-yl)-allyl	CBr	CH	CH
I-91	3-pyridin-4-yl-allyl	CBr	CH	CH
I-92	3-(2-Chloro-pyridin-4-yl)-allyl	CBr	CH	CH
I-93	4-chlorobenzyl	CCN	CH	CH
I-94	Cinnamyl	CCN	CH	CH
I-95	4-chlorocinnamyl	CCN	CH	CH
I-96	4-fluorocinnamyl	CCN	CH	CH
I-97	4-bromocinnamyl	CCN	CH	CH
I-98	4-trifluoromethylcinnamyl	CCN	CH	CH
I-99	4-trifluoromethoxycinnamyl	CCN	CH	CH
I-100	4-pentafluoroethoxycinnamyl	CCN	CH	CH
I-101	4-methoxycinnamyl	CCN	CH	CH
I-102	4-ethoxycinnamyl	CCN	CH	CH
I-103	4-cyanocinnamyl	CCN	CH	CH
I-104	3-(6-chloro-pyridin-3-yl)-allyl	CCN	CH	CH
I-105	3-(4-chlorophenyl)-but-2-enyl	CCN	CH	CH
I-106	3-(4-chlorophenyl)-3-fluoro-allyl	CCN	CH	CH
I-107	3-chloro-4-fluoro-cinnamyl	CCN	CH	CH
I-108	3,5-dichloro-cinnamyl	CCN	CH	CH
I-109	5-phenyl-penta-2,4-dienyl	CCN	CH	CH
I-110	4-isopropyloxycarbonylamino-cinnamyl	CCN	CH	CH
I-111	3-naphthalen-2-yl-allyl	CCN	CH	CH
I-112	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	CCN	CH	CH
I-113	3-(5-chloro-pyridin-2-yl)-allyl	CCN	CH	CH
I-114	3-pyridin-4-yl-allyl	CCN	CH	CH
I-115	3-(2-Chloro-pyridin-4-yl)-allyl	CCN	CH	CH
I-116	4-chlorobenzyl	COMe	CH	CH
I-117	Cinnamyl	COMe	CH	CH

I-118	4-chlorocinnamyl	COMe	CH	CH
I-119	4-fluorocinnamyl	COMe	CH	CH
I-120	4-bromocinnamyl	COMe	CH	CH
I-121	4-trifluoromethylcinnamyl	COMe	CH	CH
I-122	4-trifluoromethoxycinnamyl	COMe	CH	CH
I-123	4-pentafluoroethoxycinnamyl	COMe	CH	CH
I-124	4-methoxycinnamyl	COMe	CH	CH
I-125	4-ethoxycinnamyl	COMe	CH	CH
I-126	4-cyanocinnamyl	COMe	CH	CH
I-127	3-(6-chloro-pyridin-3-yl)-allyl	COMe	CH	CH
I-128	3-(4-chlorophenyl)-but-2-enyl	COMe	CH	CH
I-129	3-(4-chlorophenyl)-3-fluoro-allyl	COMe	CH	CH
I-130	3-chloro-4-fluoro-cinnamyl	COMe	CH	CH
I-131	3,5-dichloro-cinnamyl	COMe	CH	CH
I-132	5-phenyl-penta-2,4-dienyl	COMe	CH	CH
I-133	4-isopropyloxycarbonylamino-cinnamyl	COMe	CH	CH
I-134	3-naphthalen-2-yl-allyl	COMe	CH	CH
I-135	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	COMe	CH	CH
I-136	3-(5-chloro-pyridin-2-yl)-allyl	COMe	CH	CH
I-137	3-pyridin-4-yl-allyl	COMe	CH	CH
I-138	3-(2-Chloro-pyridin-4-yl)-allyl	COMe	CH	CH
I-139	4-chlorobenzyl	$COCF_3$	CH	CH
I-140	Cinnamyl	$COCF_3$	CH	CH
I-141	4-chlorocinnamyl	$COCF_3$	CH	CH
I-142	4-fluorocinnamyl	$COCF_3$	CH	CH
I-143	4-bromocinnamyl	$COCF_3$	CH	CH
I-144	4-trifluoromethylcinnamyl	$COCF_3$	CH	CH
I-145	4-trifluoromethoxycinnamyl	$COCF_3$	CH	CH
I-146	4-pentafluoroethoxycinnamyl	$COCF_3$	CH	CH

I-147	4-methoxycinnamyl	$COCF_3$	CH	CH
I-148	4-ethoxycinnamyl	$COCF_3$	CH	CH
I-149	4-cyanocinnamyl	$COCF_3$	CH	CH
I-150	3-(6-chloro-pyridin-3-yl)-allyl	$COCF_3$	CH	CH
I-151	3-(4-chlorophenyl)-but-2-enyl	$COCF_3$	CH	CH
I-152	3-(4-chlorophenyl)-3-fluoro-allyl	$COCF_3$	CH	CH
I-153	3-chloro-4-fluoro-cinnamyl	$COCF_3$	CH	CH
I-154	3,5-dichloro-cinnamyl	$COCF_3$	CH	CH
I-155	5-phenyl-penta-2,4-dienyl	$COCF_3$	CH	CH
I-156	4-isopropyloxycarbonylamino-cinnamyl	$COCF_3$	CH	CH
I-157	3-naphthalen-2-yl-allyl	$COCF_3$	CH	CH
I-158	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	$COCF_3$	CH	CH
I-159	3-(5-chloro-pyridin-2-yl)-allyl	$COCF_3$	CH	CH
I-160	3-pyridin-4-yl-allyl	$COCF_3$	CH	CH
I-161	3-(2-Chloro-pyridin-4-yl)-allyl	$COCF_3$	CH	CH
I-162	4-chlorobenzyl	CCH_3	CH	CH
I-163	Cinnamyl	CCH_3	CH	CH
I-164	4-chlorocinnamyl	CCH_3	CH	CH
I-165	4-fluorocinnamyl	CCH_3	CH	CH
I-166	4-bromocinnamyl	CCH_3	CH	CH
I-167	4-trifluoromethylcinnamyl	CCH_3	CH	CH
I-168	4-trifluoromethoxycinnamyl	CCH_3	CH	CH
I-169	4-pentafluoroethoxycinnamyl	CCH_3	CH	CH
I-170	4-methoxycinnamyl	CCH_3	CH	CH
I-171	4-ethoxycinnamyl	CCH_3	CH	CH
I-172	4-cyanocinnamyl	CCH_3	CH	CH
I-173	3-(6-chloro-pyridin-3-yl)-allyl	CCH_3	CH	CH
I-174	3-(4-chlorophenyl)-but-2-enyl	CCH_3	CH	CH
I-175	3-(4-chlorophenyl)-3-fluoro-allyl	CCH_3	CH	CH

I-176	3-chloro-4-fluoro-cinnamyl	CCH_3	CH	CH
I-177	3,5-dichloro-cinnamyl	CCH_3	CH	CH
I-178	5-phenyl-penta-2,4-dienyl	CCH_3	CH	CH
I-179	4-isopropyloxycarbonylamino-cinnamyl	CCH_3	CH	CH
I-180	3-naphthalen-2-yl-allyl	CCH_3	CH	CH
I-181	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	CCH_3	CH	CH
I-182	3-(5-chloro-pyridin-2-yl)-allyl	CCH_3	CH	CH
I-183	3-pyridin-4-yl-allyl	CCH_3	CH	CH
I-184	3-(2-Chloro-pyridin-4-yl)-allyl	CCH_3	CH	CH
I-185	4-chlorobenzyl	CCF_3	CH	CH
I-186	Cinnamyl	CCF_3	CH	CH
I-187	4-chlorocinnamyl	CCF_3	CH	CH
I-188	4-fluorocinnamyl	CCF_3	CH	CH
I-189	4-bromocinnamyl	CCF_3	CH	CH
I-190	4-trifluoromethylcinnamyl	CCF_3	CH	CH
I-191	4-trifluoromethoxycinnamyl	CCF_3	CH	CH
I-192	4-pentafluoroethoxycinnamyl	CCF_3	CH	CH
I-193	4-methoxycinnamyl	CCF_3	CH	CH
I-194	4-ethoxycinnamyl	CCF_3	CH	CH
I-195	4-cyanocinnamyl	CCF_3	CH	CH
I-196	3-(6-chloro-pyridin-3-yl)-allyl	CCF_3	CH	CH
I-197	3-(4-chlorophenyl)-but-2-enyl	CCF_3	CH	CH
I-198	3-(4-chlorophenyl)-3-fluoro-allyl	CCF_3	CH	CH
I-199	3-chloro-4-fluoro-cinnamyl	CCF_3	CH	CH
I-200	3,5-dichloro-cinnamyl	CCF_3	CH	CH
I-201	5-phenyl-penta-2,4-dienyl	CCF_3	CH	CH
I-202	4-isopropyloxycarbonylamino-cinnamyl	CCF_3	CH	CH
I-203	3-naphthalen-2-yl-allyl	CCF_3	CH	CH
I-204	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	CCF_3	CH	CH

I-205	3-(5-chloro-pyridin-2-yl)-allyl	CCF_3	CH	CH
I-206	3-pyridin-4-yl-allyl	CCF_3	CH	CH
I-207	3-(2-Chloro-pyridin-4-yl)-allyl	CCF_3	CH	CH
I-208	4-chlorobenzyl	CH	CCl	CH
I-209	Cinnamyl	CH	CCl	CH
I-210	4-chlorocinnamyl	CH	CCl	CH
I-211	4-fluorocinnamyl	CH	CCl	CH
I-212	4-bromocinnamyl	CH	CCl	CH
I-213	4-trifluoromethylcinnamyl	CH	CCl	CH
I-214	4-trifluoromethoxycinnamyl	CH	CCl	CH
I-215	4-pentafluoroethoxycinnamyl	CH	CCl	CH
I-216	4-methoxycinnamyl	CH	CCl	CH
I-217	4-ethoxycinnamyl	CH	CCl	CH
I-218	4-cyanocinnamyl	CH	CCl	CH
I-219	3-(6-chloro-pyridin-3-yl)-allyl	CH	CCl	CH
I-220	3-(4-chlorophenyl)-but-2-enyl	CH	CCl	CH
I-221	3-(4-chlorophenyl)-3-fluoro-allyl	CH	CCl	CH
I-222	3-chloro-4-fluoro-cinnamyl	CH	CCl	CH
I-223	3,5-dichloro-cinnamyl	CH	CCl	CH
I-224	5-phenyl-penta-2,4-dienyl	CH	CCl	CH
I-225	4-isopropyloxycarbonylamino-cinnamyl	CH	CCl	CH
I-226	3-naphthalen-2-yl-allyl	CH	CCl	CH
I-227	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	CH	CCl	CH
I-228	3-(5-chloro-pyridin-2-yl)-allyl	CH	CCl	CH
I-229	3-pyridin-4-yl-allyl	CH	CCl	CH
I-230	3-(2-Chloro-pyridin-4-yl)-allyl	CH	CCl	CH
I-231	4-chlorobenzyl	CH	CF	CH
I-232	Cinnamyl	CH	CF	CH
I-233	4-chlorocinnamyl	CH	CF	CH

I-234	4-fluorocinnamyl	CH	CF	CH
I-235	4-bromocinnamyl	CH	CF	CH
I-236	4-trifluoromethylcinnamyl	CH	CF	CH
I-237	4-trifluoromethoxycinnamyl	CH	CF	CH
I-238	4-pentafluoroethoxycinnamyl	CH	CF	CH
I-239	4-methoxycinnamyl	CH	CF	CH
I-240	4-ethoxycinnamyl	CH	CF	CH
I-241	4-cyanocinnamyl	CH	CF	CH
I-242	3-(6-chloro-pyridin-3-yl)-allyl	CH	CF	CH
I-243	3-(4-chlorophenyl)-but-2-enyl	CH	CF	CH
I-244	3-(4-chlorophenyl)-3-fluoro-allyl	CH	CF	CH
I-245	3-chloro-4-fluoro-cinnamyl	CH	CF	CH
I-246	3,5-dichloro-cinnamyl	CH	CF	CH
I-247	5-phenyl-penta-2,4-dienyl	CH	CF	CH
I-248	4-isopropyloxycarbonylamino-cinnamyl	CH	CF	CH
I-249	3-naphthalen-2-yl-allyl	CH	CF	CH
I-250	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	CH	CF	CH
I-251	3-(5-chloro-pyridin-2-yl)-allyl	CH	CF	CH
I-252	3-pyridin-4-yl-allyl	CH	CF	CH
I-253	3-(2-Chloro-pyridin-4-yl)-allyl	CH	CF	CH
I-254	4-chlorobenzyl	CH	CBr	CH
I-255	Cinnamyl	CH	CBr	CH
I-256	4-chlorocinnamyl	CH	CBr	CH
I-257	4-fluorocinnamyl	CH	CBr	CH
I-258	4-bromocinnamyl	CH	CBr	CH
I-259	4-trifluoromethylcinnamyl	CH	CBr	CH
I-260	4-trifluoromethoxycinnamyl	CH	CBr	CH
I-261	4-pentafluoroethoxycinnamyl	CH	CBr	CH
I-262	4-methoxycinnamyl	CH	CBr	CH

I-263	4-ethoxycinnamyl	CH	CBr	CH
I-264	4-cyanocinnamyl	CH	CBr	CH
I-265	3-(6-chloro-pyridin-3-yl)-allyl	CH	CBr	CH
I-266	3-(4-chlorophenyl)-but-2-enyl	CH	CBr	CH
I-267	3-(4-chlorophenyl)-3-fluoro-allyl	CH	CBr	CH
I-268	3-chloro-4-fluoro-cinnamyl	CH	CBr	CH
I-269	3,5-dichloro-cinnamyl	CH	CBr	CH
I-270	5-phenyl-penta-2,4-dienyl	CH	CBr	CH
I-271	4-isopropyloxycarbonylamino-cinnamyl	CH	CBr	CH
I-272	3-naphthalen-2-yl-allyl	CH	CBr	CH
I-273	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	CH	CBr	CH
I-274	3-(5-chloro-pyridin-2-yl)-allyl	CH	CBr	CH
I-275	3-pyridin-4-yl-allyl	CH	CBr	CH
I-276	3-(2-Chloro-pyridin-4-yl)-allyl	CH	CBr	CH
I-277	4-chlorobenzyl	CH	$COCF_3$	CH
I-278	Cinnamyl	CH	$COCF_3$	CH
I-279	4-chlorocinnamyl	CH	$COCF_3$	CH
I-280	4-fluorocinnamyl	CH	$COCF_3$	CH
I-281	4-bromocinnamyl	CH	$COCF_3$	CH
I-282	4-trifluoromethylcinnamyl	CH	$COCF_3$	CH
I-283	4-trifluoromethoxycinnamyl	CH	$COCF_3$	CH
I-284	4-pentafluoroethoxycinnamyl	CH	$COCF_3$	CH
I-285	4-methoxycinnamyl	CH	$COCF_3$	CH
I-286	4-ethoxycinnamyl	CH	$COCF_3$	CH
I-287	4-cyanocinnamyl	CH	$COCF_3$	CH
I-288	3-(6-chloro-pyridin-3-yl)-allyl	CH	$COCF_3$	CH
I-289	3-(4-chlorophenyl)-but-2-enyl	CH	$COCF_3$	CH
I-290	3-(4-chlorophenyl)-3-fluoro-allyl	CH	$COCF_3$	CH
I-291	3-chloro-4-fluoro-cinnamyl	CH	$COCF_3$	CH

I-292	3,5-dichloro-cinnamyl	CH	$COCF_3$	CH
I-293	5-phenyl-penta-2,4-dienyl	CH	$COCF_3$	CH
I-294	4-isopropyloxycarbonylamino-cinnamyl	CH	$COCF_3$	CH
I-295	3-naphthalen-2-yl-allyl	CH	$COCF_3$	CH
I-296	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	CH	$COCF_3$	CH
I-297	3-(5-chloro-pyridin-2-yl)-allyl	CH	$COCF_3$	CH
I-298	3-pyridin-4-yl-allyl	CH	$COCF_3$	CH
I-299	3-(2-Chloro-pyridin-4-yl)-allyl	CH	$COCF_3$	CH
I-300	4-chlorobenzyl	CH	CCH_3	CH
I-301	Cinnamyl	CH	CCH_3	CH
I-302	4-chlorocinnamyl	CH	CCH_3	CH
I-303	4-fluorocinnamyl	CH	CCH_3	CH
I-304	4-bromocinnamyl	CH	CCH_3	CH
I-305	4-trifluoromethylcinnamyl	CH	CCH_3	CH
I-306	4-trifluoromethoxycinnamyl	CH	CCH_3	CH
I-307	4-pentafluoroethoxycinnamyl	CH	CCH_3	CH
I-308	4-methoxycinnamyl	CH	CCH_3	CH
I-309	4-ethoxycinnamyl	CH	CCH_3	CH
I-310	4-cyanocinnamyl	CH	CCH_3	CH
I-311	3-(6-chloro-pyridin-3-yl)-allyl	CH	CCH_3	CH
I-312	3-(4-chlorophenyl)-but-2-enyl	CH	CCH_3	CH
I-313	3-(4-chlorophenyl)-3-fluoro-allyl	CH	CCH_3	CH
I-314	3-chloro-4-fluoro-cinnamyl	CH	CCH_3	CH
I-315	3,5-dichloro-cinnamyl	CH	CCH_3	CH
I-316	5-phenyl-penta-2,4-dienyl	CH	CCH_3	CH
I-317	4-isopropyloxycarbonylamino-cinnamyl	CH	CCH_3	CH
I-318	3-naphthalen-2-yl-allyl	CH	CCH_3	CH
I-319	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	CH	CCH_3	CH
I-320	3-(5-chloro-pyridin-2-yl)-allyl	CH	CCH_3	CH

I-321	3-pyridin-4-yl-allyl	CH	CCH_3	CH
I-322	3-(2-Chloro-pyridin-4-yl)-allyl	CH	CCH_3	CH
I-323	4-chlorobenzyl	CH	CCF_3	CH
I-324	Cinnamyl	CH	CCF_3	CH
I-325	4-chlorocinnamyl	CH	CCF_3	CH
I-326	4-fluorocinnamyl	CH	CCF_3	CH
I-327	4-bromocinnamyl	CH	CCF_3	CH
I-328	4-trifluoromethylcinnamyl	CH	CCF_3	CH
I-329	4-trifluoromethoxycinnamyl	CH	CCF_3	CH
I-330	4-pentafluoroethoxycinnamyl	CH	CCF_3	CH
I-331	4-methoxycinnamyl	CH	CCF_3	CH
I-332	4-ethoxycinnamyl	CH	CCF_3	CH
I-333	4-cyanocinnamyl	CH	CCF_3	CH
I-334	3-(6-chloro-pyridin-3-yl)-allyl	CH	CCF_3	CH
I-335	3-(4-chlorophenyl)-but-2-enyl	CH	CCF_3	CH
I-336	3-(4-chlorophenyl)-3-fluoro-allyl	CH	CCF_3	CH
I-337	3-chloro-4-fluoro-cinnamyl	CH	CCF_3	CH
I-338	3,5-dichloro-cinnamyl	CH	CCF_3	CH
I-339	5-phenyl-penta-2,4-dienyl	CH	CCF_3	CH
I-340	4-isopropyloxycarbonylamino-cinnamyl	CH	CCF_3	CH
I-341	3-naphthalen-2-yl-allyl	CH	CCF_3	CH
I-342	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	CH	CCF_3	CH
I-343	3-(5-chloro-pyridin-2-yl)-allyl	CH	CCF_3	CH
I-344	3-pyridin-4-yl-allyl	CH	CCF_3	CH
I-345	3-(2-Chloro-pyridin-4-yl)-allyl	CH	CCF_3	CH
I-346	4-chlorobenzyl	CH	CH	CF
I-347	Cinnamyl	CH	CH	CF
I-348	4-chlorocinnamyl	CH	CH	CF
I-349	4-fluorocinnamyl	CH	CH	CF

I-350	4-bromocinnamyl	CH	CH	CF
I-351	4-trifluoromethylcinnamyl	CH	CH	CF
I-352	4-trifluoromethoxycinnamyl	CH	CH	CF
I-353	4-pentafluoroethoxycinnamyl	CH	CH	CF
I-354	4-methoxycinnamyl	CH	CH	CF
I-355	4-ethoxycinnamyl	CH	CH	CF
I-356	4-cyanocinnamyl	CH	CH	CF
I-357	3-(6-chloro-pyridin-3-yl)-allyl	CH	CH	CF
I-358	3-(4-chlorophenyl)-but-2-enyl	CH	CH	CF
I-359	3-(4-chlorophenyl)-3-fluoro-allyl	CH	CH	CF
I-360	3-chloro-4-fluoro-cinnamyl	CH	CH	CF
I-361	3,5-dichloro-cinnamyl	CH	CH	CF
I-362	5-phenyl-penta-2,4-dienyl	CH	CH	CF
I-363	4-isopropyloxycarbonylamino-cinnamyl	CH	CH	CF
I-364	3-naphthalen-2-yl-allyl	CH	CH	CF
I-365	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	CH	CH	CF
I-366	3-(5-chloro-pyridin-2-yl)-allyl	CH	CH	CF
I-367	3-pyridin-4-yl-allyl	CH	CH	CF
I-368	3-(2-Chloro-pyridin-4-yl)-allyl	CH	CH	CF
I-369	4-chlorobenzyl	CH	CH	CCl
I-370	Cinnamyl	CH	CH	CCl
I-371	4-chlorocinnamyl	CH	CH	CCl
I-372	4-fluorocinnamyl	CH	CH	CCl
I-373	4-bromocinnamyl	CH	CH	CCl
I-374	4-trifluoromethylcinnamyl	CH	CH	CCl
I-375	4-trifluoromethoxycinnamyl	CH	CH	CCl
I-376	4-pentafluoroethoxycinnamyl	CH	CH	CCl
I-377	4-methoxycinnamyl	CH	CH	CCl
I-378	4-ethoxycinnamyl	CH	CH	CCl

I-379	4-cyanocinnamyl	CH	CH	CCl
I-380	3-(6-chloro-pyridin-3-yl)-allyl	CH	CH	CCl
I-381	3-(4-chlorophenyl)-but-2-enyl	CH	CH	CCl
I-382	3-(4-chlorophenyl)-3-fluoro-allyl	CH	CH	CCl
I-383	3-chloro-4-fluoro-cinnamyl	CH	CH	CCl
I-384	3,5-dichloro-cinnamyl	CH	CH	CCl
I-385	5-phenyl-penta-2,4-dienyl	CH	CH	CCl
I-386	4-isopropyloxycarbonylamino-cinnamyl	CH	CH	CCl
I-387	3-naphthalen-2-yl-allyl	CH	CH	CCl
I-388	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	CH	CH	CCl
I-389	3-(5-chloro-pyridin-2-yl)-allyl	CH	CH	CCl
I-390	3-pyridin-4-yl-allyl	CH	CH	CCl
I-391	3-(2-Chloro-pyridin-4-yl)-allyl	CH	CH	CCl
I-438	4-chlorobenzyl	CCl	CH	CCl
I-439	Cinnamyl	CCl	CH	CCl
I-440	4-chlorocinnamyl	CCl	CH	CCl
I-441	4-fluorocinnamyl	CCl	CH	CCl
I-442	4-bromocinnamyl	CCl	CH	CCl
I-443	4-trifluoromethylcinnamyl	CCl	CH	CCl
I-444	4-trifluoromethoxycinnamyl	CCl	CH	CCl
I-445	4-pentafluoroethoxycinnamyl	CCl	CH	CCl
I-446	4-methoxycinnamyl	CCl	CH	CCl
I-447	4-ethoxycinnamyl	CCl	CH	CCl
I-448	4-cyanocinnamyl	CCl	CH	CCl
I-449	3-(6-chloro-pyridin-3-yl)-allyl	CCl	CH	CCl
I-450	3-(4-chlorophenyl)-but-2-enyl	CCl	CH	CCl
I-451	3-(4-chlorophenyl)-3-fluoro-allyl	CCl	CH	CCl
I-452	3-chloro-4-fluoro-cinnamyl	CCl	CH	CCl
I-453	3,5-dichloro-cinnamyl	CCl	CH	CCl

I-454	5-phenyl-penta-2,4-dienyl	CCl	CH	CCl
I-455	4-isopropyloxycarbonylamino-cinnamyl	CCl	CH	CCl
I-456	3-naphthalen-2-yl-allyl	CCl	CH	CCl
I-457	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	CCl	CH	CCl
I-458	3-(5-chloro-pyridin-2-yl)-allyl	CCl	CH	CCl
I-459	3-pyridin-4-yl-allyl	CCl	CH	CCl
I-460	3-(2-Chloro-pyridin-4-yl)-allyl	CCl	CH	CCl
I-461	4-chlorobenzyl	CF	CH	CF
I-462	Cinnamyl	CF	CH	CF
I-463	4-chlorocinnamyl	CF	CH	CF
I-464	4-fluorocinnamyl	CF	CH	CF
I-465	4-bromocinnamyl	CF	CH	CF
I-466	4-trifluoromethylcinnamyl	CF	CH	CF
I-467	4-trifluoromethoxycinnamyl	CF	CH	CF
I-468	4-pentafluoroethoxycinnamyl	CF	CH	CF
I-469	4-methoxycinnamyl	CF	CH	CF
I-470	4-ethoxycinnamyl	CF	CH	CF
I-471	4-cyanocinnamyl	CF	CH	CF
I-472	3-(6-chloro-pyridin-3-yl)-allyl	CF	CH	CF
I-473	3-(4-chlorophenyl)-but-2-enyl	CF	CH	CF
I-474	3-(4-chlorophenyl)-3-fluoro-allyl	CF	CH	CF
I-475	3-chloro-4-fluoro-cinnamyl	CF	CH	CF
I-476	3,5-dichloro-cinnamyl	CF	CH	CF
I-477	5-phenyl-penta-2,4-dienyl	CF	CH	CF
I-478	4-isopropyloxycarbonylamino-cinnamyl	CF	CH	CF
I-479	3-naphthalen-2-yl-allyl	CF	CH	CF
I-480	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	CF	CH	CF
I-481	3-(5-chloro-pyridin-2-yl)-allyl	CF	CH	CF
I-482	3-pyridin-4-yl-allyl	CF	CH	CF

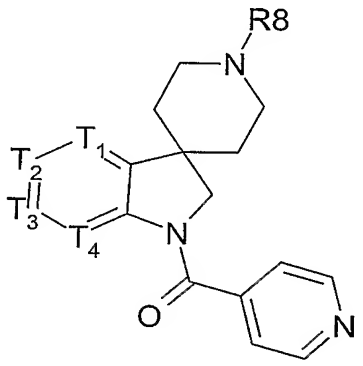
I-483	3-(2-Chloro-pyridin-4-yl)-allyl	CF	CH	CF
I-484	4-chlorobenzyl	CF	CF	CH
I-485	Cinnamyl	CF	CF	CH
I-486	4-chlorocinnamyl	CF	CF	CH
I-487	4-fluorocinnamyl	CF	CF	CH
I-488	4-bromocinnamyl	CF	CF	CH
I-489	4-trifluoromethylcinnamyl	CF	CF	CH
I-490	4-trifluoromethoxycinnamyl	CF	CF	CH
I-491	4-pentafluoroethoxycinnamyl	CF	CF	CH
I-492	4-methoxycinnamyl	CF	CF	CH
I-493	4-ethoxycinnamyl	CF	CF	CH
I-494	4-cyanocinnamyl	CF	CF	CH
I-495	3-(6-chloro-pyridin-3-yl)-allyl	CF	CF	CH
I-496	3-(4-chlorophenyl)-but-2-enyl	CF	CF	CH
I-497	3-(4-chlorophenyl)-3-fluoro-allyl	CF	CF	CH
I-498	3-chloro-4-fluoro-cinnamyl	CF	CF	CH
I-499	3,5-dichloro-cinnamyl	CF	CF	CH
I-500	5-phenyl-penta-2,4-dienyl	CF	CF	CH
I-501	4-isopropyloxycarbonylamino-cinnamyl	CF	CF	CH
I-502	3-naphthalen-2-yl-allyl	CF	CF	CH
I-503	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	CF	CF	CH
I-504	3-(5-chloro-pyridin-2-yl)-allyl	CF	CF	CH
I-505	3-pyridin-4-yl-allyl	CF	CF	CH
I-506	3-(2-Chloro-pyridin-4-yl)-allyl	CF	CF	CH
I-507	4-chlorobenzyl	CF	CCl	CH
I-508	Cinnamyl	CF	CCl	CH
I-509	4-chlorocinnamyl	CF	CCl	CH
I-510	4-fluorocinnamyl	CF	CCl	CH
I-511	4-bromocinnamyl	CF	CCl	CH

I-512	4-trifluoromethylcinnamyl	CF	CCl	CH
I-513	4-trifluoromethoxycinnamyl	CF	CCl	CH
I-514	4-pentafluoroethoxycinnamyl	CF	CCl	CH
I-515	4-methoxycinnamyl	CF	CCl	CH
I-516	4-ethoxycinnamyl	CF	CCl	CH
I-517	4-cyanocinnamyl	CF	CCl	CH
I-518	3-(6-chloro-pyridin-3-yl)-allyl	CF	CCl	CH
I-519	3-(4-chlorophenyl)-but-2-enyl	CF	CCl	CH
I-520	3-(4-chlorophenyl)-3-fluoro-allyl	CF	CCl	CH
I-521	3-chloro-4-fluoro-cinnamyl	CF	CCl	CH
I-522	3,5-dichloro-cinnamyl	CF	CCl	CH
I-523	5-phenyl-penta-2,4-dienyl	CF	CCl	CH
I-524	4-isopropyloxycarbonylamino-cinnamyl	CF	CCl	CH
I-525	3-naphthalen-2-yl-allyl	CF	CCl	CH
I-526	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	CF	CCl	CH
I-527	3-(5-chloro-pyridin-2-yl)-allyl	CF	CCl	CH
I-528	3-pyridin-4-yl-allyl	CF	CCl	CH
I-529	3-(2-Chloro-pyridin-4-yl)-allyl	CF	CCl	CH
I-530	4-chlorobenzyl	CCl	CF	CH
I-531	Cinnamyl	CCl	CF	CH
I-532	4-chlorocinnamyl	CCl	CF	CH
I-533	4-fluorocinnamyl	CCl	CF	CH
I-534	4-bromocinnamyl	CCl	CF	CH
I-535	4-trifluoromethylcinnamyl	CCl	CF	CH
I-536	4-trifluoromethoxycinnamyl	CCl	CF	CH
I-537	4-pentafluoroethoxycinnamyl	CCl	CF	CH
I-538	4-methoxycinnamyl	CCl	CF	CH
I-539	4-ethoxycinnamyl	CCl	CF	CH
I-540	4-cyanocinnamyl	CCl	CF	CH

I-541	3-(6-chloro-pyridin-3-yl)-allyl	CCl	CF	CH
I-542	3-(4-chlorophenyl)-but-2-enyl	CCl	CF	CH
I-543	3-(4-chlorophenyl)-3-fluoro-allyl	CCl	CF	CH
I-544	3-chloro-4-fluoro-cinnamyl	CCl	CF	CH
I-545	3,5-dichloro-cinnamyl	CCl	CF	CH
I-546	5-phenyl-penta-2,4-dienyl	CCl	CF	CH
I-547	4-isopropyloxycarbonylamino-cinnamyl	CCl	CF	CH
I-548	3-naphthalen-2-yl-allyl	CCl	CF	CH
I-549	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	CCl	CF	CH
I-550	3-(5-chloro-pyridin-2-yl)-allyl	CCl	CF	CH
I-551	3-pyridin-4-yl-allyl	CCl	CF	CH
I-552	3-(2-Chloro-pyridin-4-yl)-allyl	CCl	CF	CH
I-553	4-chlorobenzyl	CCl	CCl	CH
I-554	Cinnamyl	CCl	CCl	CH
I-555	4-chlorocinnamyl	CCl	CCl	CH
I-556	4-fluorocinnamyl	CCl	CCl	CH
I-557	4-bromocinnamyl	CCl	CCl	CH
I-558	4-trifluoromethylcinnamyl	CCl	CCl	CH
I-559	4-trifluoromethoxycinnamyl	CCl	CCl	CH
I-560	4-pentafluoroethoxycinnamyl	CCl	CCl	CH
I-561	4-methoxycinnamyl	CCl	CCl	CH
I-562	4-ethoxycinnamyl	CCl	CCl	CH
I-563	4-cyanocinnamyl	CCl	CCl	CH
I-564	3-(6-chloro-pyridin-3-yl)-allyl	CCl	CCl	CH
I-565	3-(4-chlorophenyl)-but-2-enyl	CCl	CCl	CH
I-566	3-(4-chlorophenyl)-3-fluoro-allyl	CCl	CCl	CH
I-567	3-chloro-4-fluoro-cinnamyl	CCl	CCl	CH
I-568	3,5-dichloro-cinnamyl	CCl	CCl	CH
I-569	5-phenyl-penta-2,4-dienyl	CCl	CCl	CH

I-570	4-isopropyloxycarbonylamino-cinnamyl	CCl	CCl	CH
I-571	3-naphthalen-2-yl-allyl	CCl	CCl	CH
I-572	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	CCl	CCl	CH
I-573	3-(5-chloro-pyridin-2-yl)-allyl	CCl	CCl	CH
I-574	3-pyridin-4-yl-allyl	CCl	CCl	CH
I-575	3-(2-Chloro-pyridin-4-yl)-allyl	CCl	CCl	CH

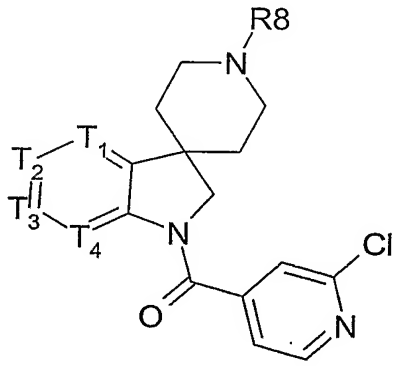
Table II provides 575 compounds of formula Ib



(Ib)

wherein T1 is N, T2 is CR^{4a}, T3 is CR^{4b}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

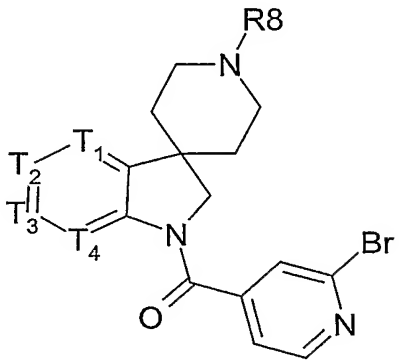
Table III provides 575 compounds of formula Ic



(Ic)

wherein T1 is N, T2 is CR^{4a}, T3 is CR^{4b}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

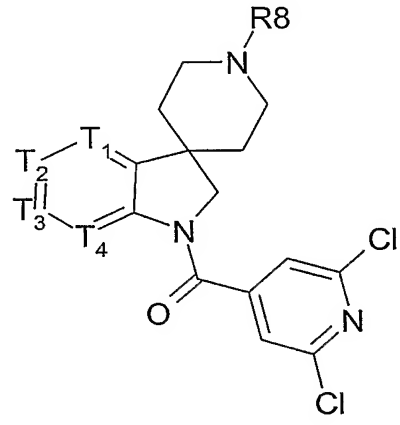
Table IV provides 575 compounds of formula Id



(Id)

wherein T1 is N, T2 is CR^{4a}, T3 is CR^{4b}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

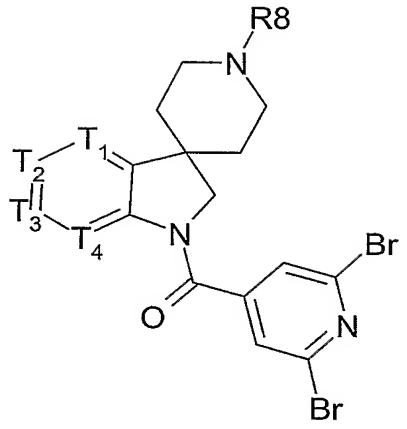
Table V provides 575 compounds of formula Ie



(Ie)

wherein T1 is N, T2 is CR^{4a}, T3 is CR^{4b}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

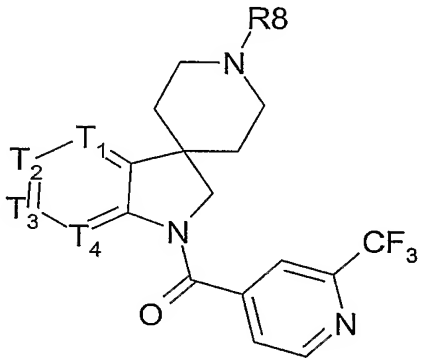
Table VI provides 575 compounds of formula If



(If)

wherein T1 is N, T2 is CR^{4a}, T3 is CR^{4b}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

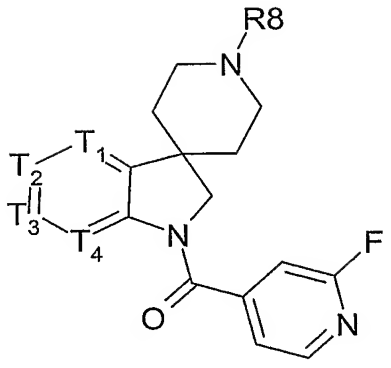
Table VII provides 575 compounds of formula Ig



(Ig)

wherein T1 is N, T2 is CR^{4a}, T3 is CR^{4b}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

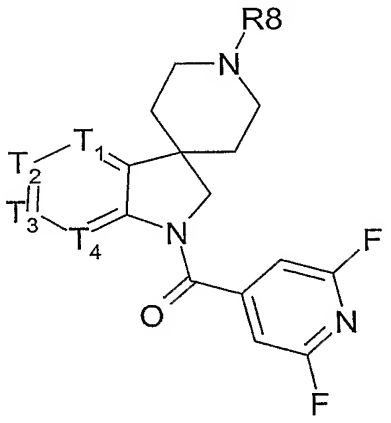
Table VIII provides 575 compounds of formula Ih



(Ih)

wherein T1 is N, T2 is CR^{4a}, T3 is CR^{4b}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

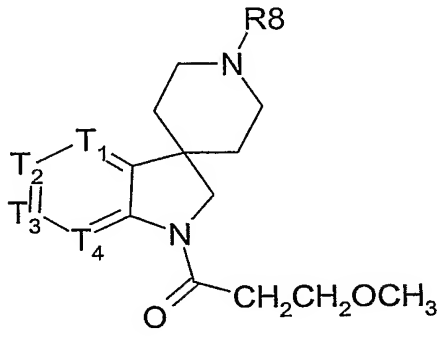
Table IX provides 575 compounds of formula Ii



(Ii)

wherein T1 is N, T2 is CR^{4a}, T3 is CR^{4b}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

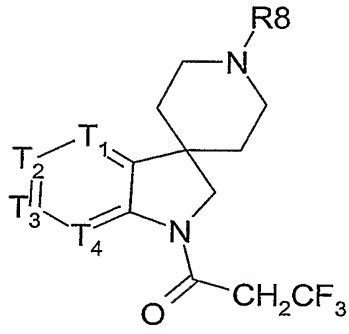
Table X provides 575 compounds of formula Ij



(Ij)

wherein T1 is N, T2 is CR^{4a}, T3 is CR^{4b}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

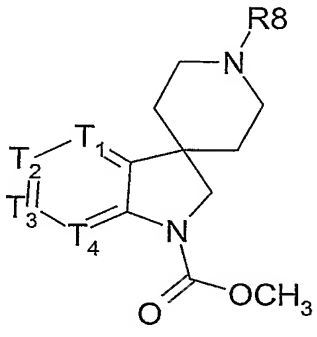
Table XI provides 575 compounds of formula Ik



(Ik)

wherein T1 is N, T2 is CR^{4a}, T3 is CR^{4b}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

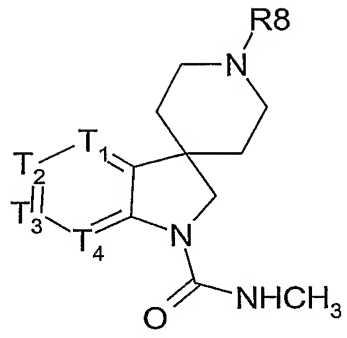
Table XII provides 575 compounds of formula Il



(Il)

wherein T1 is N, T2 is CR^{4a}, T3 is CR^{4b}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

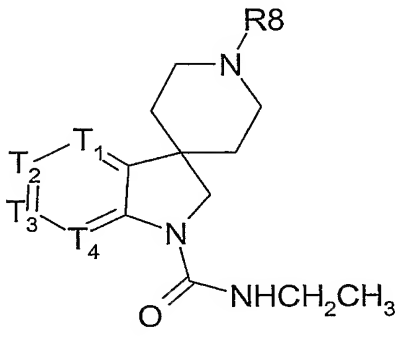
Table XIII provides 575 compounds of formula Im



(Im)

wherein T1 is N, T2 is CR^{4a}, T3 is CR^{4b}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

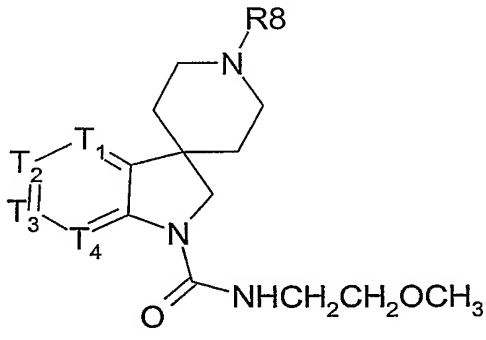
Table XIV provides 575 compounds of formula In



(In)

wherein T1 is N, T2 is CR^{4a}, T3 is CR^{4b}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

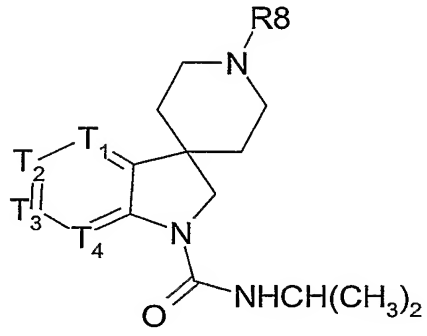
Table XV provides 575 compounds of formula Io



(Io)

wherein T1 is N, T2 is CR^{4a}, T3 is CR^{4b}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

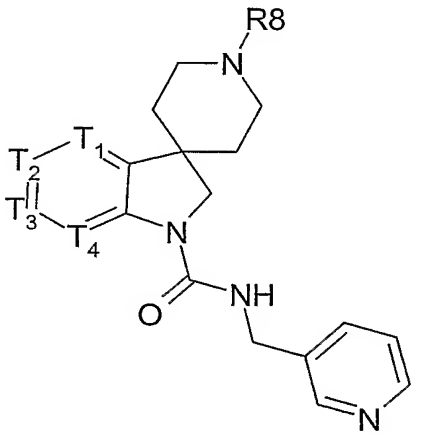
Table XVI provides 575 compounds of formula Ip



(Ip)

wherein T1 is N, T2 is CR^{4a}, T3 is CR^{4b}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

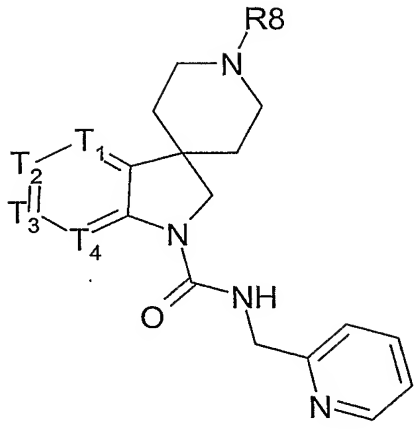
Table XVII provides 575 compounds of formula Iq



(Iq)

wherein T1 is N, T2 is CR^{4a}, T3 is CR^{4b}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

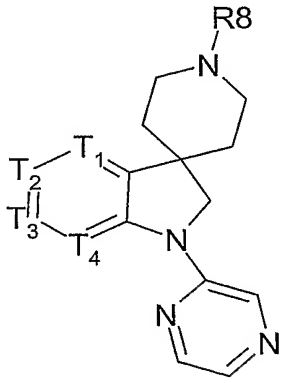
Table XVIII provides 575 compounds of formula Ir



(Ir)

wherein T1 is N, T2 is CR^{4a}, T3 is CR^{4b}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

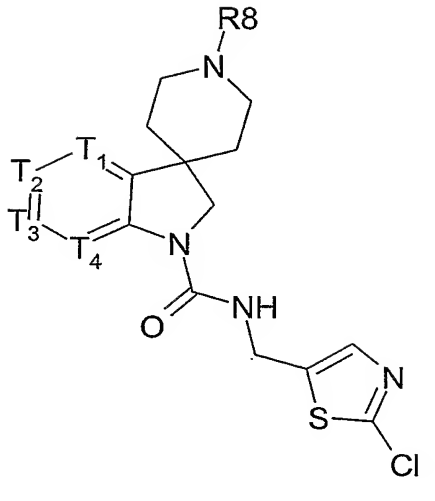
Table XIX provides 575 compounds of formula Is



(Is)

wherein T1 is N, T2 is CR^{4a}, T3 is CR^{4b}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

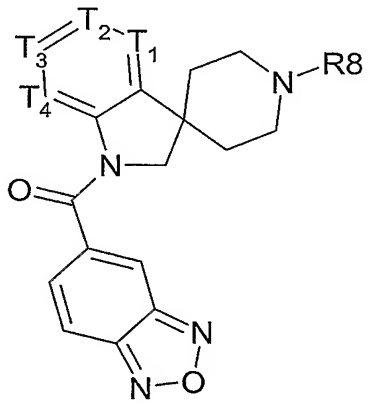
Table XX provides 575 compounds of formula It



(It)

wherein T1 is N, T2 is CR^{4a}, T3 is CR^{4b}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table XXI provides 575 compounds of formula Iu



(Iu)

wherein T1 is N, T2 is CR^{4a}, T3 is CR^{4b}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table XXII provides 575 compounds of formula Ia wherein T1 is CR^{4b}, T2 is N, T3 is CR^{4a}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table XXIII provides 575 compounds of formula Ib wherein T1 is CR^{4b}, T2 is N, T3 is CR^{4a}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table XXIV provides 575 compounds of formula Ic wherein T1 is CR^{4b}, T2 is N, T3 is CR^{4a}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table XXV provides 575 compounds of formula Id wherein T1 is CR^{4b}, T2 is N, T3 is CR^{4a}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table XXVI provides 575 compounds of formula Ie wherein T1 is CR^{4b}, T2 is N, T3 is CR^{4a}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table XXVII provides 575 compounds of formula If wherein T1 is CR^{4b}, T2 is N, T3 is CR^{4a}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table XXVIII provides 575 compounds of formula Ig wherein T1 is CR^{4b}, T2 is N, T3 is CR^{4a}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table XXIX provides 575 compounds of formula Ih wherein T1 is CR^{4b}, T2 is N, T3 is CR^{4a}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table XXX provides 575 compounds of formula Ii wherein T1 is CR^{4b}, T2 is N, T3 is CR^{4a}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table XXXI provides 575 compounds of formula Ij wherein T1 is CR^{4b}, T2 is N, T3 is CR^{4a}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table XXXII provides 575 compounds of formula Ik wherein T1 is CR^{4b}, T2 is N, T3 is CR^{4a}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table XXXIII provides 575 compounds of formula Il wherein T1 is CR^{4b}, T2 is N, T3 is CR^{4a}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table XXXIV provides 575 compounds of formula Im wherein T1 is CR^{4b}, T2 is N, T3 is CR^{4a}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table XXXV provides 575 compounds of formula In wherein T1 is CR^{4b}, T2 is N, T3 is CR^{4a}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table XXXVI provides 575 compounds of formula Io wherein T1 is CR^{4b}, T2 is N, T3 is CR^{4a}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table XXXVII provides 575 compounds of formula Ip wherein T1 is CR^{4b}, T2 is N, T3 is CR^{4a}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table XXXVIII provides 575 compounds of formula Iq wherein T1 is CR^{4b}, T2 is N, T3 is CR^{4a}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table XXXIX provides 575 compounds of formula Ir wherein T1 is CR^{4b}, T2 is N, T3 is CR^{4a}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table XL provides 575 compounds of formula Is wherein T1 is CR^{4b}, T2 is N, T3 is CR^{4a}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table XLI provides 575 compounds of formula It wherein T1 is CR^{4b}, T2 is N, T3 is CR^{4a}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table XLII provides 575 compounds of formula Iu wherein T1 is CR^{4b}, T2 is N, T3 is CR^{4a}, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table XLIII provides 575 compounds of formula Ia wherein T1 is CR^{4b}, T2 is $CR4^a$, T3 is N, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table XLIV provides 575 compounds of formula Ib wherein T1 is CR^{4b}, T2 is $CR4^a$, T3 is N, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table XLV provides 575 compounds of formula Ic wherein T1 is CR^{4b}, T2 is $CR4^a$, T3 is N, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table XLVI provides 575 compounds of formula Id wherein T1 is CR^{4b}, T2 is $CR4^a$, T3 is N, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table XLVII provides 575 compounds of formula Ie wherein T1 is CR^{4b}, T2 is $CR4^a$, T3 is N, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table XLVIII provides 575 compounds of formula If wherein T1 is CR^{4b}, T2 is $CR4^a$, T3 is N, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table XLIX provides 575 compounds of formula Ig wherein T1 is CR^{4b}, T2 is $CR4^a$, T3 is N, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table L provides 575 compounds of formula Ih wherein T1 is CR^{4b}, T2 is $CR4^a$, T3 is N, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LI provides 575 compounds of formula Ii wherein T1 is CR^{4b}, T2 is $CR4^a$, T3 is N, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LII provides 575 compounds of formula Ij wherein T1 is CR^{4b}, T2 is $CR4^a$, T3 is N, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LIII provides 575 compounds of formula Ik wherein T1 is CR^{4b}, T2 is $CR4^a$, T3 is N, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LIV provides 575 compounds of formula Il wherein T1 is CR^{4b}, T2 is $CR4^a$, T3 is N, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LV provides 575 compounds of formula Im wherein T1 is CR^{4b}, T2 is $CR4^a$, T3 is N, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LVI provides 575 compounds of formula In wherein T1 is CR^{4b}, T2 is $CR4^a$, T3 is N, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LVII provides 575 compounds of formula Io wherein T1 is CR^{4b}, T2 is $CR4^a$, T3 is N, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LVIII provides 575 compounds of formula Ip wherein T1 is CR^{4b}, T2 is $CR4^a$, T3 is N, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LIX provides 575 compounds of formula Iq wherein T1 is CR^{4b}, T2 is $CR4^a$, T3 is N, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LX provides 575 compounds of formula Ir wherein T1 is CR^{4b}, T2 is $CR4^a$, T3 is N, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LXI provides 575 compounds of formula Is wherein T1 is CR^{4b}, T2 is $CR4^a$, T3 is N, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LXII provides 575 compounds of formula It wherein T1 is CR^{4b}, T2 is $CR4^a$, T3 is N, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LXIII provides 575 compounds of formula Iu wherein T1 is CR^{4b}, T2 is $CR4^a$, T3 is N, T4 is CR^{4c} and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LXIV provides 575 compounds of formula Ia wherein T1 is CR^{4c}, T2 is $CR4^a$, T3 is CR^{4b}, T4 is N and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LXV provides 575 compounds of formula Ib wherein T1 is CR^{4c}, T2 is $CR4^a$, T3 is CR^{4b}, T4 is N and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LXVI provides 575 compounds of formula Ic wherein T1 is CR^{4c}, T2 is $CR4^a$, T3 is CR^{4b}, T4 is N and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LXVII provides 575 compounds of formula Id wherein T1 is CR^{4c}, T2 is $CR4^a$, T3 is CR^{4b}, T4 is N and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LXVIII provides 575 compounds of formula Ie wherein T1 is CR^{4c}, T2 is $CR4^a$, T3 is CR^{4b}, T4 is N and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LXIX provides 575 compounds of formula If wherein T1 is CR^{4c}, T2 is $CR4^a$, T3 is CR^{4b}, T4 is N and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LXX provides 575 compounds of formula Ig wherein T1 is T1 is CR^{4c}, T2 is $CR4^a$, T3 is CR^{4b}, T4 is N and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LXXI provides 575 compounds of formula Ih wherein T1 is CR^{4c}, T2 is $CR4^a$, T3 is CR^{4b}, T4 is N and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LXXII provides 575 compounds of formula Ii wherein T1 is CR^{4c}, T2 is $CR4^a$, T3 is CR^{4b}, T4 is N and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LXXIII provides 575 compounds of formula Ij wherein T1 is CR^{4c}, T2 is $CR4^a$, T3 is CR^{4b}, T4 is N and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LXIV provides 575 compounds of formula Ik wherein T1 is CR^{4c}, T2 is $CR4^a$, T3 is CR^{4b}, T4 is N and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LXXV provides 575 compounds of formula Il wherein T1 is CR^{4c}, T2 is $CR4^a$, T3 is CR^{4b}, T4 is N and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LXXVI provides 575 compounds of formula Im wherein T1 is CR^{4c}, T2 is $CR4^a$, T3 is CR^{4b}, T4 is N and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LXXVII provides 575 compounds of formula In wherein T1 is CR^{4c}, T2 is $CR4^a$, T3 is CR^{4b}, T4 is N and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LXXVIII provides 575 compounds of formula Io wherein T1 is CR^{4c}, T2 is $CR4^a$, T3 is CR^{4b}, T4 is N and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LXXIX provides 575 compounds of formula Ip wherein T1 is CR^{4c}, T2 is $CR4^a$, T3 is CR^{4b}, T4 is N and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LXXX provides 575 compounds of formula Iq wherein T1 is CR^{4c}, T2 is $CR4^a$, T3 is CR^{4b}, T4 is N and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LXXXI provides 575 compounds of formula Ir wherein T1 is CR^{4c}, T2 is $CR4^a$, T3 is CR^{4b}, T4 is N and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LXXXII provides 575 compounds of formula Is wherein T1 is CR^{4c}, T2 is $CR4^a$, T3 is CR^{4b}, T4 is N and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LXXXIII provides 575 compounds of formula It wherein T1 is CR^{4c}, T2 is $CR4^a$, T3 is CR^{4b}, T4 is N and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LXXXIV provides 575 compounds of formula Iu wherein T1 is CR^{4c}, T2 is $CR4^a$, T3 is CR^{4b}, T4 is N and the values of R^8, R^{4a}, R^{4b} and R^{4c} are given in Table 1.

Table LXXXV provides 345 compounds of formula Ia wherein T1 is N, T2 is $CR4^e$, T3 is N, T4 is CR^{4f} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table 2

Compound No	R^8	R^{4e}	R^{4f}
LXXXV-1	4-chlorobenzyl	CH	CH
LXXXV-2	Cinnamyl	CH	CH
LXXXV-3	4-chlorocinnamyl	CH	CH
LXXXV-4	4-fluorocinnamyl	CH	CH
LXXXV-5	4-bromocinnamyl	CH	CH
LXXXV-6	4-trifluoromethylcinnamyl	CH	CH
LXXXV-7	4-trifluoromethoxycinnamyl	CH	CH
LXXXV-8	4-pentafluoroethoxycinnamyl	CH	CH
LXXXV-9	4-methoxycinnamyl	CH	CH
LXXXV-10	4-ethoxycinnamyl	CH	CH
LXXXV-11	4-cyanocinnamyl	CH	CH
LXXXV-12	3-(6-chloro-pyridin-3-yl)-allyl	CH	CH
LXXXV-13	3-(4-chlorophenyl)-but-2-enyl	CH	CH
LXXXV-14	3-(4-chlorophenyl)-3-fluoro-allyl	CH	CH
LXXXV-15	3-chloro-4-fluoro-cinnamyl	CH	CH
LXXXV-16	3,5-dichloro-cinnamyl	CH	CH
LXXXV-17	5-phenyl-penta-2,4-dienyl	CH	CH
LXXXV-18	4-isopropyloxycarbonylamino-cinnamyl	CH	CH
LXXXV-19	3-naphthalen-2-yl-allyl	CH	CH
LXXXV-20	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	CH	CH
LXXXV-21	3-(5-chloro-pyridin-2-yl)-allyl	CH	CH
LXXXV-22	3-pyridin-4-yl-allyl	CH	CH
LXXXV-23	3-(2-Chloro-pyridin-4-yl)-allyl	CH	CH

LXXXV-24	4-chlorobenzyl	CF	CH
LXXXV-25	Cinnamyl	CF	CH
LXXXV-26	4-chlorocinnamyl	CF	CH
LXXXV-27	4-fluorocinnamyl	CF	CH
LXXXV-28	4-bromocinnamyl	CF	CH
LXXXV-29	4-trifluoromethylcinnamyl	CF	CH
LXXXV-30	4-trifluoromethoxycinnamyl	CF	CH
LXXXV-31	4-pentafluoroethoxycinnamyl	CF	CH
LXXXV-32	4-methoxycinnamyl	CF	CH
LXXXV-33	4-ethoxycinnamyl	CF	CH
LXXXV-34	4-cyanocinnamyl	CF	CH
LXXXV-35	3-(6-chloro-pyridin-3-yl)-allyl	CF	CH
LXXXV-36	3-(4-chlorophenyl)-but-2-enyl	CF	CH
LXXXV-37	3-(4-chlorophenyl)-3-fluoro-allyl	CF	CH
LXXXV-38	3-chloro-4-fluoro-cinnamyl	CF	CH
LXXXV-39	3,5-dichloro-cinnamyl	CF	CH
LXXXV-40	5-phenyl-penta-2,4-dienyl	CF	CH
LXXXV-41	4-isopropyloxycarbonylamino-cinnamyl	CF	CH
LXXXV-42	3-naphthalen-2-yl-allyl	CF	CH
LXXXV-43	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	CF	CH
LXXXV-44	3-(5-chloro-pyridin-2-yl)-allyl	CF	CH
LXXXV-45	3-pyridin-4-yl-allyl	CF	CH
LXXXV-46	3-(2-Chloro-pyridin-4-yl)-allyl	CF	CH
LXXXV-47	4-chlorobenzyl	CCl	CH
LXXXV-48	Cinnamyl	CCl	CH
LXXXV-49	4-chlorocinnamyl	CCl	CH
LXXXV-50	4-fluorocinnamyl	CCl	CH
LXXXV-51	4-bromocinnamyl	CCl	CH
LXXXV-52	4-trifluoromethylcinnamyl	CCl	CH

LXXXV-53	4-trifluoromethoxycinnamyl	CCl	CH
LXXXV-54	4-pentafluoroethoxycinnamyl	CCl	CH
LXXXV-55	4-methoxycinnamyl	CCl	CH
LXXXV-56	4-ethoxycinnamyl	CCl	CH
LXXXV-57	4-cyanocinnamyl	CCl	CH
LXXXV-58	3-(6-chloro-pyridin-3-yl)-allyl	CCl	CH
LXXXV-59	3-(4-chlorophenyl)-but-2-enyl	CCl	CH
LXXXV-60	3-(4-chlorophenyl)-3-fluoro-allyl	CCl	CH
LXXXV-61	3-chloro-4-fluoro-cinnamyl	CCl	CH
LXXXV-62	3,5-dichloro-cinnamyl	CCl	CH
LXXXV-63	5-phenyl-penta-2,4-dienyl	CCl	CH
LXXXV-64	4-isopropyloxycarbonylamino-cinnamyl	CCl	CH
LXXXV-65	3-naphthalen-2-yl-allyl	CCl	CH
LXXXV-66	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	CCl	CH
LXXXV-67	3-(5-chloro-pyridin-2-yl)-allyl	CCl	CH
LXXXV-68	3-pyridin-4-yl-allyl	CCl	CH
LXXXV-69	3-(2-Chloro-pyridin-4-yl)-allyl	CCl	CH
LXXXV-70	4-chlorobenzyl	CBr	CH
LXXXV-71	Cinnamyl	CBr	CH
LXXXV-72	4-chlorocinnamyl	CBr	CH
LXXXV-73	4-fluorocinnamyl	CBr	CH
LXXXV-74	4-bromocinnamyl	CBr	CH
LXXXV-75	4-trifluoromethylcinnamyl	CBr	CH
LXXXV-76	4-trifluoromethoxycinnamyl	CBr	CH
LXXXV-77	4-pentafluoroethoxycinnamyl	CBr	CH
LXXXV-78	4-methoxycinnamyl	CBr	CH
LXXXV-79	4-ethoxycinnamyl	CBr	CH
LXXXV-80	4-cyanocinnamyl	CBr	CH
LXXXV-81	3-(6-chloro-pyridin-3-yl)-allyl	CBr	CH

LXXXV-82	3-(4-chlorophenyl)-but-2-enyl	CBr	CH
LXXXV-83	3-(4-chlorophenyl)-3-fluoro-allyl	CBr	CH
LXXXV-84	3-chloro-4-fluoro-cinnamyl	CBr	CH
LXXXV-85	3,5-dichloro-cinnamyl	CBr	CH
LXXXV-86	5-phenyl-penta-2,4-dienyl	CBr	CH
LXXXV-87	4-isopropyloxycarbonylamino-cinnamyl	CBr	CH
LXXXV-88	3-naphthalen-2-yl-allyl	CBr	CH
LXXXV-89	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	CBr	CH
LXXXV-90	3-(5-chloro-pyridin-2-yl)-allyl	CBr	CH
LXXXV-91	3-pyridin-4-yl-allyl	CBr	CH
LXXXV-92	3-(2-Chloro-pyridin-4-yl)-allyl	CBr	CH
LXXXV-93	4-chlorobenzyl	CCN	CH
LXXXV-94	Cinnamyl	CCN	CH
LXXXV-95	4-chlorocinnamyl	CCN	CH
LXXXV-96	4-fluorocinnamyl	CCN	CH
LXXXV-97	4-bromocinnamyl	CCN	CH
LXXXV-98	4-trifluoromethylcinnamyl	CCN	CH
LXXXV-99	4-trifluoromethoxycinnamyl	CCN	CH
LXXXV-100	4-pentafluoroethoxycinnamyl	CCN	CH
LXXXV-101	4-methoxycinnamyl	CCN	CH
LXXXV-102	4-ethoxycinnamyl	CCN	CH
LXXXV-103	4-cyanocinnamyl	CCN	CH
LXXXV-104	3-(6-chloro-pyridin-3-yl)-allyl	CCN	CH
LXXXV-105	3-(4-chlorophenyl)-but-2-enyl	CCN	CH
LXXXV-106	3-(4-chlorophenyl)-3-fluoro-allyl	CCN	CH
LXXXV-107	3-chloro-4-fluoro-cinnamyl	CCN	CH
LXXXV-108	3,5-dichloro-cinnamyl	CCN	CH
LXXXV-109	5-phenyl-penta-2,4-dienyl	CCN	CH
LXXXV-110	4-isopropyloxycarbonylamino-cinnamyl	CCN	CH

LXXXV-111	3-naphthalen-2-yl-allyl	CCN	CH
LXXXV-112	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	CCN	CH
LXXXV-113	3-(5-chloro-pyridin-2-yl)-allyl	CCN	CH
LXXXV-114	3-pyridin-4-yl-allyl	CCN	CH
LXXXV-115	3-(2-Chloro-pyridin-4-yl)-allyl	CCN	CH
LXXXV-116	4-chlorobenzyl	COMe	CH
LXXXV-117	Cinnamyl	COMe	CH
LXXXV-118	4-chlorocinnamyl	COMe	CH
LXXXV-119	4-fluorocinnamyl	COMe	CH
LXXXV-120	4-bromocinnamyl	COMe	CH
LXXXV-121	4-trifluoromethylcinnamyl	COMe	CH
LXXXV-122	4-trifluoromethoxycinnamyl	COMe	CH
LXXXV-123	4-pentafluoroethoxycinnamyl	COMe	CH
LXXXV-124	4-methoxycinnamyl	COMe	CH
LXXXV-125	4-ethoxycinnamyl	COMe	CH
LXXXV-126	4-cyanocinnamyl	COMe	CH
LXXXV-127	3-(6-chloro-pyridin-3-yl)-allyl	COMe	CH
LXXXV-128	3-(4-chlorophenyl)-but-2-enyl	COMe	CH
LXXXV-129	3-(4-chlorophenyl)-3-fluoro-allyl	COMe	CH
LXXXV-130	3-chloro-4-fluoro-cinnamyl	COMe	CH
LXXXV-131	3,5-dichloro-cinnamyl	COMe	CH
LXXXV-132	5-phenyl-penta-2,4-dienyl	COMe	CH
LXXXV-133	4-isopropyloxycarbonylamino-cinnamyl	COMe	CH
LXXXV-134	3-naphthalen-2-yl-allyl	COMe	CH
LXXXV-135	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	COMe	CH
LXXXV-136	3-(5-chloro-pyridin-2-yl)-allyl	COMe	CH
LXXXV-137	3-pyridin-4-yl-allyl	COMe	CH
LXXXV-138	3-(2-Chloro-pyridin-4-yl)-allyl	COMe	CH
LXXXV-139	4-chlorobenzyl	$COCF_3$	CH

LXXXV-140	Cinnamyl	$COCF_3$	CH
LXXXV-141	4-chlorocinnamyl	$COCF_3$	CH
LXXXV-142	4-fluorocinnamyl	$COCF_3$	CH
LXXXV-143	4-bromocinnamyl	$COCF_3$	CH
LXXXV-144	4-trifluoromethylcinnamyl	$COCF_3$	CH
LXXXV-145	4-trifluoromethoxycinnamyl	$COCF_3$	CH
LXXXV-146	4-pentafluoroethoxycinnamyl	$COCF_3$	CH
LXXXV-147	4-methoxycinnamyl	$COCF_3$	CH
LXXXV-148	4-ethoxycinnamyl	$COCF_3$	CH
LXXXV-149	4-cyanocinnamyl	$COCF_3$	CH
LXXXV-150	3-(6-chloro-pyridin-3-yl)-allyl	$COCF_3$	CH
LXXXV-151	3-(4-chlorophenyl)-but-2-enyl	$COCF_3$	CH
LXXXV-152	3-(4-chlorophenyl)-3-fluoro-allyl	$COCF_3$	CH
LXXXV-153	3-chloro-4-fluoro-cinnamyl	$COCF_3$	CH
LXXXV-154	3,5-dichloro-cinnamyl	$COCF_3$	CH
LXXXV-155	5-phenyl-penta-2,4-dienyl	$COCF_3$	CH
LXXXV-156	4-isopropyloxycarbonylamino-cinnamyl	$COCF_3$	CH
LXXXV-157	3-naphthalen-2-yl-allyl	$COCF_3$	CH
LXXXV-158	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	$COCF_3$	CH
LXXXV-159	3-(5-chloro-pyridin-2-yl)-allyl	$COCF_3$	CH
LXXXV-160	3-pyridin-4-yl-allyl	$COCF_3$	CH
LXXXV-161	3-(2-Chloro-pyridin-4-yl)-allyl	$COCF_3$	CH
LXXXV-162	4-chlorobenzyl	CCH_3	CH
LXXXV-163	Cinnamyl	CCH_3	CH
LXXXV-164	4-chlorocinnamyl	CCH_3	CH
LXXXV-165	4-fluorocinnamyl	CCH_3	CH
LXXXV-166	4-bromocinnamyl	CCH_3	CH
LXXXV-167	4-trifluoromethylcinnamyl	CCH_3	CH
LXXXV-168	4-trifluoromethoxycinnamyl	CCH_3	CH

LXXXV-169	4-pentafluoroethoxycinnamyl	CCH_3	CH
LXXXV-170	4-methoxycinnamyl	CCH_3	CH
LXXXV-171	4-ethoxycinnamyl	CCH_3	CH
LXXXV-172	4-cyanocinnamyl	CCH_3	CH
LXXXV-173	3-(6-chloro-pyridin-3-yl)-allyl	CCH_3	CH
LXXXV-174	3-(4-chlorophenyl)-but-2-enyl	CCH_3	CH
LXXXV-175	3-(4-chlorophenyl)-3-fluoro-allyl	CCH_3	CH
LXXXV-176	3-chloro-4-fluoro-cinnamyl	CCH_3	CH
LXXXV-177	3,5-dichloro-cinnamyl	CCH_3	CH
LXXXV-178	5-phenyl-penta-2,4-dienyl	CCH_3	CH
LXXXV-179	4-isopropyloxycarbonylamino-cinnamyl	CCH_3	CH
LXXXV-180	3-naphthalen-2-yl-allyl	CCH_3	CH
LXXXV-181	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	CCH_3	CH
LXXXV-182	3-(5-chloro-pyridin-2-yl)-allyl	CCH_3	CH
LXXXV-183	3-pyridin-4-yl-allyl	CCH_3	CH
LXXXV-184	3-(2-Chloro-pyridin-4-yl)-allyl	CCH_3	CH
LXXXV-185	4-chlorobenzyl	CCF_3	CH
LXXXV-186	Cinnamyl	CCF_3	CH
LXXXV-187	4-chlorocinnamyl	CCF_3	CH
LXXXV-188	4-fluorocinnamyl	CCF_3	CH
LXXXV-189	4-bromocinnamyl	CCF_3	CH
LXXXV-190	4-trifluoromethylcinnamyl	CCF_3	CH
LXXXV-191	4-trifluoromethoxycinnamyl	CCF_3	CH
LXXXV-192	4-pentafluoroethoxycinnamyl	CCF_3	CH
LXXXV-193	4-methoxycinnamyl	CCF_3	CH
LXXXV-194	4-ethoxycinnamyl	CCF_3	CH
LXXXV-195	4-cyanocinnamyl	CCF_3	CH
LXXXV-196	3-(6-chloro-pyridin-3-yl)-allyl	CCF_3	CH
LXXXV-197	3-(4-chlorophenyl)-but-2-enyl	CCF_3	CH

LXXXV-198	3-(4-chlorophenyl)-3-fluoro-allyl	CCF_3	CH
LXXXV-199	3-chloro-4-fluoro-cinnamyl	CCF_3	CH
LXXXV-200	3,5-dichloro-cinnamyl	CCF_3	CH
LXXXV-201	5-phenyl-penta-2,4-dienyl	CCF_3	CH
LXXXV-202	4-isopropyloxycarbonylamino-cinnamyl	CCF_3	CH
LXXXV-203	3-naphthalen-2-yl-allyl	CCF_3	CH
LXXXV-204	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	CCF_3	CH
LXXXV-205	3-(5-chloro-pyridin-2-yl)-allyl	CCF_3	CH
LXXXV-206	3-pyridin-4-yl-allyl	CCF_3	CH
LXXXV-207	3-(2-Chloro-pyridin-4-yl)-allyl	CCF_3	CH
LXXXV-208	4-chlorobenzyl	CH	CCl
LXXXV-209	Cinnamyl	CH	CCl
LXXXV-210	4-chlorocinnamyl	CH	CCl
LXXXV-211	4-fluorocinnamyl	CH	CCl
LXXXV-212	4-bromocinnamyl	CH	CCl
LXXXV-213	4-trifluoromethylcinnamyl	CH	CCl
LXXXV-214	4-trifluoromethoxycinnamyl	CH	CCl
LXXXV-215	4-pentafluoroethoxycinnamyl	CH	CCl
LXXXV-216	4-methoxycinnamyl	CH	CCl
LXXXV-217	4-ethoxycinnamyl	CH	CCl
LXXXV-218	4-cyanocinnamyl	CH	CCl
LXXXV-219	3-(6-chloro-pyridin-3-yl)-allyl	CH	CCl
LXXXV-220	3-(4-chlorophenyl)-but-2-enyl	CH	CCl
LXXXV-221	3-(4-chlorophenyl)-3-fluoro-allyl	CH	CCl
LXXXV-222	3-chloro-4-fluoro-cinnamyl	CH	CCl
LXXXV-223	3,5-dichloro-cinnamyl	CH	CCl
LXXXV-224	5-phenyl-penta-2,4-dienyl	CH	CCl
LXXXV-225	4-isopropyloxycarbonylamino-cinnamyl	CH	CCl
LXXXV-226	3-naphthalen-2-yl-allyl	CH	CCl

LXXXV-227	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	CH	CCl
LXXXV-228	3-(5-chloro-pyridin-2-yl)-allyl	CH	CCl
LXXXV-229	3-pyridin-4-yl-allyl	CH	CCl
LXXXV-230	3-(2-Chloro-pyridin-4-yl)-allyl	CH	CCl
LXXXV-231	4-chlorobenzyl	CH	CF
LXXXV-232	Cinnamyl	CH	CF
LXXXV-233	4-chlorocinnamyl	CH	CF
LXXXV-234	4-fluorocinnamyl	CH	CF
LXXXV-235	4-bromocinnamyl	CH	CF
LXXXV-236	4-trifluoromethylcinnamyl	CH	CF
LXXXV-237	4-trifluoromethoxycinnamyl	CH	CF
LXXXV-238	4-pentafluoroethoxycinnamyl	CH	CF
LXXXV-239	4-methoxycinnamyl	CH	CF
LXXXV-240	4-ethoxycinnamyl	CH	CF
LXXXV-241	4-cyanocinnamyl	CH	CF
LXXXV-242	3-(6-chloro-pyridin-3-yl)-allyl	CH	CF
LXXXV-243	3-(4-chlorophenyl)-but-2-enyl	CH	CF
LXXXV-244	3-(4-chlorophenyl)-3-fluoro-allyl	CH	CF
LXXXV-245	3-chloro-4-fluoro-cinnamyl	CH	CF
LXXXV-246	3,5-dichloro-cinnamyl	CH	CF
LXXXV-247	5-phenyl-penta-2,4-dienyl	CH	CF
LXXXV-248	4-isopropyloxycarbonylamino-cinnamyl	CH	CF
LXXXV-249	3-naphthalen-2-yl-allyl	CH	CF
LXXXV-250	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	CH	CF
LXXXV-251	3-(5-chloro-pyridin-2-yl)-allyl	CH	CF
LXXXV-252	3-pyridin-4-yl-allyl	CH	CF
LXXXV-253	3-(2-Chloro-pyridin-4-yl)-allyl	CH	CF
LXXXV-254	4-chlorobenzyl	CCl	CCl
LXXXV-255	Cinnamyl	CCl	CCl

LXXXV-256	4-chlorocinnamyl	CCl	CCl
LXXXV-257	4-fluorocinnamyl	CCl	CCl
LXXXV-258	4-bromocinnamyl	CCl	CCl
LXXXV-259	4-trifluoromethylcinnamyl	CCl	CCl
LXXXV-260	4-trifluoromethoxycinnamyl	CCl	CCl
LXXXV-261	4-pentafluoroethoxycinnamyl	CCl	CCl
LXXXV-262	4-methoxycinnamyl	CCl	CCl
LXXXV-263	4-ethoxycinnamyl	CCl	CCl
LXXXV-264	4-cyanocinnamyl	CCl	CCl
LXXXV-265	3-(6-chloro-pyridin-3-yl)-allyl	CCl	CCl
LXXXV-266	3-(4-chlorophenyl)-but-2-enyl	CCl	CCl
LXXXV-267	3-(4-chlorophenyl)-3-fluoro-allyl	CCl	CCl
LXXXV-268	3-chloro-4-fluoro-cinnamyl	CCl	CCl
LXXXV-269	3,5-dichloro-cinnamyl	CCl	CCl
LXXXV-270	5-phenyl-penta-2,4-dienyl	CCl	CCl
LXXXV-271	4-isopropyloxycarbonylamino-cinnamyl	CCl	CCl
LXXXV-272	3-naphthalen-2-yl-allyl	CCl	CCl
LXXXV-273	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	CCl	CCl
LXXXV-274	3-(5-chloro-pyridin-2-yl)-allyl	CCl	CCl
LXXXV-275	3-pyridin-4-yl-allyl	CCl	CCl
LXXXV-276	3-(2-Chloro-pyridin-4-yl)-allyl	CCl	CCl
LXXXV-277	4-chlorobenzyl	CF	CCl
LXXXV-278	Cinnamyl	CF	CCl
LXXXV-279	4-chlorocinnamyl	CF	CCl
LXXXV-280	4-fluorocinnamyl	CF	CCl
LXXXV-281	4-bromocinnamyl	CF	CCl
LXXXV-282	4-trifluoromethylcinnamyl	CF	CCl
LXXXV-283	4-trifluoromethoxycinnamyl	CF	CCl
LXXXV-284	4-pentafluoroethoxycinnamyl	CF	CCl

LXXXV-285	4-methoxycinnamyl	CF	CCl
LXXXV-286	4-ethoxycinnamyl	CF	CCl
LXXXV-287	4-cyanocinnamyl	CF	CCl
LXXXV-288	3-(6-chloro-pyridin-3-yl)-allyl	CF	CCl
LXXXV-289	3-(4-chlorophenyl)-but-2-enyl	CF	CCl
LXXXV-290	3-(4-chlorophenyl)-3-fluoro-allyl	CF	CCl
LXXXV-291	3-chloro-4-fluoro-cinnamyl	CF	CCl
LXXXV-292	3,5-dichloro-cinnamyl	CF	CCl
LXXXV-293	5-phenyl-penta-2,4-dienyl	CF	CCl
LXXXV-294	4-isopropyloxycarbonylamino-cinnamyl	CF	CCl
LXXXV-295	3-naphthalen-2-yl-allyl	CF	CCl
LXXXV-296	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	CF	CCl
LXXXV-297	3-(5-chloro-pyridin-2-yl)-allyl	CF	CCl
LXXXV-298	3-pyridin-4-yl-allyl	CF	CCl
LXXXV-299	3-(2-Chloro-pyridin-4-yl)-allyl	CF	CCl
LXXXV-300	4-chlorobenzyl	CCl	CF
LXXXV-301	Cinnamyl	CCl	CF
LXXXV-302	4-chlorocinnamyl	CCl	CF
LXXXV-303	4-fluorocinnamyl	CCl	CF
LXXXV-304	4-bromocinnamyl	CCl	CF
LXXXV-305	4-trifluoromethylcinnamyl	CCl	CF
LXXXV-306	4-trifluoromethoxycinnamyl	CCl	CF
LXXXV-307	4-pentafluoroethoxycinnamyl	CCl	CF
LXXXV-308	4-methoxycinnamyl	CCl	CF
LXXXV-309	4-ethoxycinnamyl	CCl	CF
LXXXV-310	4-cyanocinnamyl	CCl	CF
LXXXV-311	3-(6-chloro-pyridin-3-yl)-allyl	CCl	CF
LXXXV-312	3-(4-chlorophenyl)-but-2-enyl	CCl	CF
LXXXV-313	3-(4-chlorophenyl)-3-fluoro-allyl	CCl	CF

LXXXV-314	3-chloro-4-fluoro-cinnamyl	CCl	CF
LXXXV-315	3,5-dichloro-cinnamyl	CCl	CF
LXXXV-316	5-phenyl-penta-2,4-dienyl	CCl	CF
LXXXV-317	4-isopropyloxycarbonylamino-cinnamyl	CCl	CF
LXXXV-318	3-naphthalen-2-yl-allyl	CCl	CF
LXXXV-319	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	CCl	CF
LXXXV-320	3-(5-chloro-pyridin-2-yl)-allyl	CCl	CF
LXXXV-321	3-pyridin-4-yl-allyl	CCl	CF
LXXXV-322	3-(2-Chloro-pyridin-4-yl)-allyl	CCl	CF
LXXXV-323	4-chlorobenzyl	CF	CF
LXXXV-324	Cinnamyl	CF	CF
LXXXV-325	4-chlorocinnamyl	CF	CF
LXXXV-326	4-fluorocinnamyl	CF	CF
LXXXV-327	4-bromocinnamyl	CF	CF
LXXXV-328	4-trifluoromethylcinnamyl	CF	CF
LXXXV-329	4-trifluoromethoxycinnamyl	CF	CF
LXXXV-330	4-pentafluoroethoxycinnamyl	CF	CF
LXXXV-331	4-methoxycinnamyl	CF	CF
LXXXV-332	4-ethoxycinnamyl	CF	CF
LXXXV-333	4-cyanocinnamyl	CF	CF
LXXXV-334	3-(6-chloro-pyridin-3-yl)-allyl	CF	CF
LXXXV-335	3-(4-chlorophenyl)-but-2-enyl	CF	CF
LXXXV-336	3-(4-chlorophenyl)-3-fluoro-allyl	CF	CF
LXXXV-337	3-chloro-4-fluoro-cinnamyl	CF	CF
LXXXV-338	3,5-dichloro-cinnamyl	CF	CF
LXXXV-339	5-phenyl-penta-2,4-dienyl	CF	CF
LXXXV-340	4-isopropyloxycarbonylamino-cinnamyl	CF	CF
LXXXV-341	3-naphthalen-2-yl-allyl	CF	CF
LXXXV-342	3-(5-trifluoromethyl-pyridin-2-yl)-allyl	CF	CF

LXXXV-343	3-(5-chloro-pyridin-2-yl)-allyl	CF	CF
LXXXV-344	3-pyridin-4-yl-allyl	CF	CF
LXXXV-345	3-(2-Chloro-pyridin-4-yl)-allyl	CF	CF

Table LXXXVI provides 345 compounds of formula Ib wherein T1 is N, T2 is $CR4^e$, T3 is N, T4 is CR^{4f} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table LXXXVII provides 345 compounds of formula Ic wherein T1 is N, T2 is $CR4^e$, T3 is N, T4 is CR^{4f} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table LXXXVIII provides 345 compounds of formula Id wherein T1 is N, T2 is $CR4^e$, T3 is N, T4 is CR^{4f} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table LXXXIX provides 345 compounds of formula Ie wherein T1 is N, T2 is $CR4^e$, T3 is N, T4 is CR^{4f} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table XC provides 345 compounds of formula If wherein T1 is N, T2 is $CR4^e$, T3 is N, T4 is CR^{4f} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table XCI provides 345 compounds of formula Ig wherein T1 is N, T2 is $CR4^e$, T3 is N, T4 is CR^{4f} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table XCII provides 345 compounds of formula Ih wherein T1 is N, T2 is $CR4^e$, T3 is N, T4 is CR^{4f} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table XCIII provides 345 compounds of formula Ii wherein T1 is N, T2 is $CR4^e$, T3 is N, T4 is CR^{4f} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table XCIV provides 345 compounds of formula Ij wherein T1 is N, T2 is $CR4^e$, T3 is N, T4 is CR^{4f} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table XCV provides 345 compounds of formula Ik wherein T1 is N, T2 is $CR4^e$, T3 is N, T4 is CR^{4f} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table XCVI provides 345 compounds of formula Il wherein T1 is N, T2 is $CR4^e$, T3 is N, T4 is CR^{4f} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table XCVII provides 345 compounds of formula Im wherein T1 is N, T2 is $CR4^e$, T3 is N, T4 is CR^{4f} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table XCVIII provides 345 compounds of formula In wherein T1 is N, T2 is $CR4^e$, T3 is N, T4 is CR^{4f} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table IC provides 345 compounds of formula Io wherein T1 is N, T2 is $CR4^e$, T3 is N, T4 is CR^{4f} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table C provides 345 compounds of formula Ip wherein T1 is N, T2 is $CR4^e$, T3 is N, T4 is CR^{4f} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CI provides 345 compounds of formula Iq wherein T1 is N, T2 is $CR4^e$, T3 is N, T4 is CR^{4f} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CII provides 345 compounds of formula Ir wherein T1 is N, T2 is $CR4^e$, T3 is N, T4 is CR^{4f} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CIII provides 345 compounds of formula Is wherein T1 is N, T2 is $CR4^e$, T3 is N, T4 is CR^{4f} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CIV provides 345 compounds of formula It wherein T1 is N, T2 is $CR4^e$, T3 is N, T4 is CR^{4f} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CV provides 345 compounds of formula Iu wherein T1 is N, T2 is $CR4^e$, T3 is N, T4 is CR^{4f} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CVI provides 345 compounds of formula Ia wherein T1 is N, T2 is $CR4^e$, T3 is CR^{4f}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CVII provides 345 compounds of formula Ib wherein T1 is N, T2 is $CR4^e$, T3 is CR^{4f}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CVIII provides 345 compounds of formula Ic wherein T1 is N, T2 is $CR4^e$, T3 is CR^{4f}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CIX provides 345 compounds of formula Id wherein T1 is N, T2 is $CR4^e$, T3 is CR^{4f}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CX provides 345 compounds of formula Ie wherein T1 is N, T2 is $CR4^e$, T3 is CR^{4f}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXI provides 345 compounds of formula If wherein T1 is N, T2 is $CR4^e$, T3 is CR^{4f}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXII provides 345 compounds of formula Ig wherein T1 is N, T2 is $CR4^e$, T3 is CR^{4f}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXIII provides 345 compounds of formula Ih wherein T1 is N, T2 is $CR4^e$, T3 is CR^{4f}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXIV provides 345 compounds of formula Ii wherein T1 is N, T2 is $CR4^e$, T3 is CR^{4f}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXV provides 345 compounds of formula Ij wherein T1 is N, T2 is $CR4^e$, T3 is CR^{4f}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXVI provides 345 compounds of formula Ik wherein T1 is N, T2 is $CR4^e$, T3 is CR^{4f}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXVII provides 345 compounds of formula Il wherein T1 is N, T2 is $CR4^e$, T3 is CR^{4f}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXVIII provides 345 compounds of formula Im wherein T1 is N, T2 is $CR4^e$, T3 is CR^{4f}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXIX provides 345 compounds of formula In wherein T1 is N, T2 is $CR4^e$, T3 is CR^{4f}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXX provides 345 compounds of formula Io wherein T1 is N, T2 is $CR4^e$, T3 is CR^{4f}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXXI provides 345 compounds of formula Ip wherein T1 is N, T2 is $CR4^e$, T3 is CR^{4f}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXXII provides 345 compounds of formula Iq wherein T1 is N, T2 is $CR4^e$, T3 is CR^{4f}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXXIII provides 345 compounds of formula Ir wherein T1 is N, T2 is $CR4^e$, T3 is CR^{4f}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXXIV provides 345 compounds of formula Is wherein T1 is N, T2 is $CR4^e$, T3 is CR^{4f}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXXV provides 345 compounds of formula It wherein T1 is N, T2 is $CR4^e$, T3 is CR^{4f}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXXVI provides 345 compounds of formula Iu wherein T1 is N, T2 is $CR4^e$, T3 is CR^{4f}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXXVII provides 345 compounds of formula Ia wherein T1 is R^{4f}, T2 is N, T3 is CR^{4e}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXXVIII provides 345 compounds of formula Ib wherein T1 is R^{4f}, T2 is N, T3 is CR^{4e}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXXIX provides 345 compounds of formula Ic wherein T1 is R^{4f}, T2 is N, T3 is CR^{4e}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXXX provides 345 compounds of formula Id wherein T1 is R^{4f}, T2 is N, T3 is CR^{4e}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXXXI provides 345 compounds of formula Ie wherein T1 is R^{4f}, T2 is N, T3 is CR^{4e}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXXXII provides 345 compounds of formula If wherein T1 is R^{4f}, T2 is N, T3 is CR^{4e}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXXXIII provides 345 compounds of formula Ig wherein T1 is R^{4f}, T2 is N, T3 is CR^{4e}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXXXIV provides 345 compounds of formula Ih wherein T1 is R^{4f}, T2 is N, T3 is CR^{4e}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXXXV provides 345 compounds of formula Ii wherein T1 is R^{4f}, T2 is N, T3 is CR^{4e}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXXXVI provides 345 compounds of formula Ij wherein T1 is R^{4f}, T2 is N, T3 is CR^{4e}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXXXVII provides 345 compounds of formula Ik wherein T1 is R^{4f}, T2 is N, T3 is CR^{4e}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXXXVIII provides 345 compounds of formula Il wherein T1 is R^{4f}, T2 is N, T3 is CR^{4e}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXXXIX provides 345 compounds of formula Im wherein T1 is R^{4f}, T2 is N, T3 is CR^{4e}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXL provides 345 compounds of formula In wherein T1 is R^{4f}, T2 is N, T3 is CR^{4e}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXLI provides 345 compounds of formula Io wherein T1 is R^{4f}, T2 is N, T3 is CR^{4e}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXLII provides 345 compounds of formula Ip wherein T1 is R^{4f}, T2 is N, T3 is CR^{4e}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXLIII provides 345 compounds of formula Iq wherein T1 is R^{4f}, T2 is N, T3 is CR^{4e}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

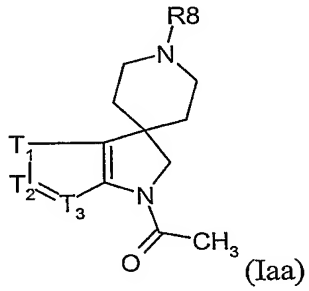
Table CXLIV provides 345 compounds of formula Ir wherein T1 is R^{4f}, T2 is N, T3 is CR^{4e}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXLV provides 345 compounds of formula Is wherein T1 is R^{4f}, T2 is N, T3 is CR^{4e}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXLVI provides 345 compounds of formula It wherein T1 is R^{4f}, T2 is N, T3 is CR^{4e}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CXLVII provides 345 compounds of formula Iu wherein T1 is R^{4f}, T2 is N, T3 is CR^{4e}, T4 is N and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

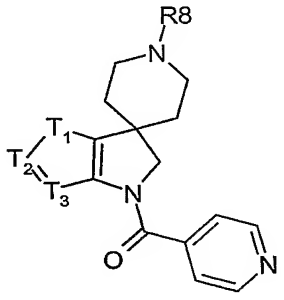
Table CXLVIII provides 345 compounds of formula Iaa



(Iaa)

wherein T1 is S, T2 is CR^{4e} and T3 is CR^{4e} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

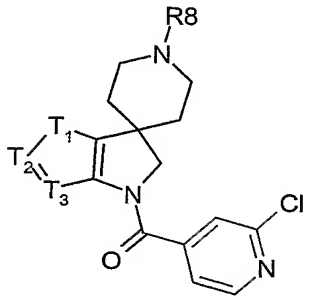
Table CIL provides 345 compounds of formula Iab



(Iab)

wherein T1 is S, T2 is CR^{4e} and T3 is CR^{4e} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

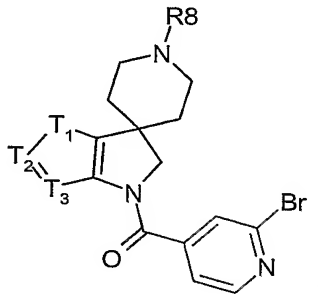
Table CL provides 345 compounds of formula Iac



(Iac)

wherein T1 is S, T2 is CR^{4e} and T3 is CR^{4e} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

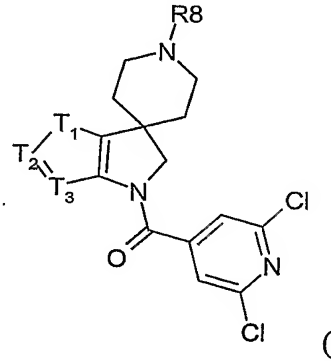
Table CLI provides 345 compounds of formula Iad



(Iad)

wherein T1 is S, T2 is CR^{4e} and T3 is CR^{4e} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

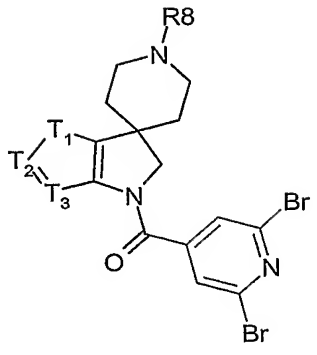
Table CLII provides 345 compounds of formula Iae



(Iae)

wherein T1 is S, T2 is CR^{4e} and T3 is CR^{4e} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

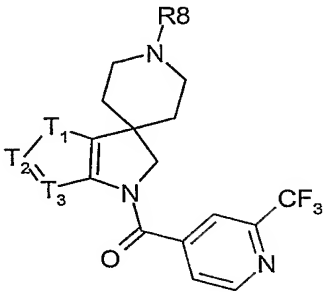
Table CLIII provides 345 compounds of formula Iaf



(Iaf)

wherein T1 is S, T2 is CR^{4e} and T3 is CR^{4e} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

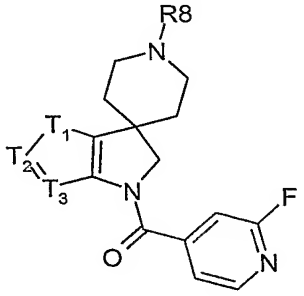
Table CLIV provides 345 compounds of formula Iag



(Iag)

wherein T1 is S, T2 is CR^{4e} and T3 is CR^{4e} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

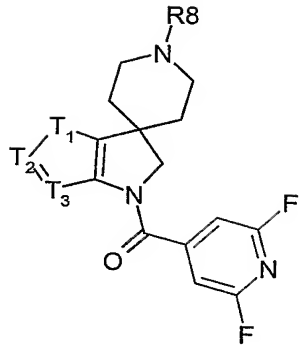
Table CLV provides 345 compounds of formula Iah



(Iah)

wherein T1 is S, T2 is CR^{4e} and T3 is CR^{4e} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

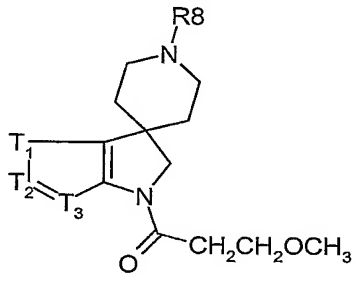
Table CLVI provides 345 compounds of formula Iai



(Iai)

wherein T1 is S, T2 is CR^{4e} and T3 is CR^{4e} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

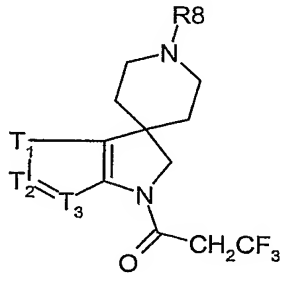
Table CLVII provides 345 compounds of formula Iaj



(Iaj)

wherein T1 is S, T2 is CR^{4e} and T3 is CR^{4e} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

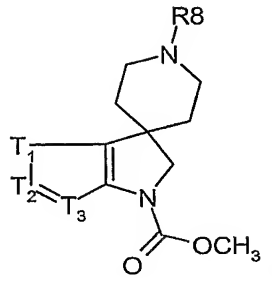
Table CLVIII provides 345 compounds of formula Iak



(Iak)

wherein T1 is S, T2 is CR^{4e} and T3 is CR^{4e} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

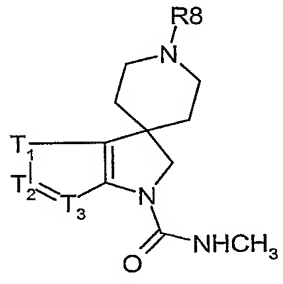
Table CLIX provides 345 compounds of formula Ial



(Ial)

wherein T1 is S, T2 is CR^{4e} and T3 is CR^{4e} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

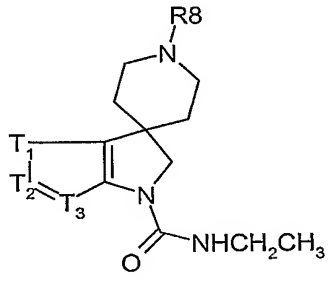
Table CLX provides 345 compounds of formula Iam



(Iam)

wherein T1 is S, T2 is CR^{4e} and T3 is CR^{4e} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

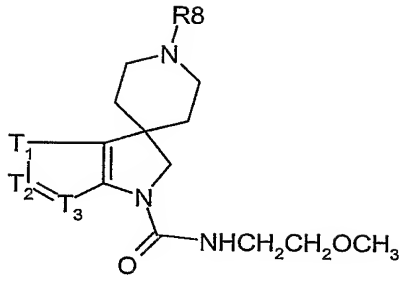
Table CLXI provides 345 compounds of formula Ian



(Ian)

wherein T1 is S, T2 is CR^{4e} and T3 is CR^{4e} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

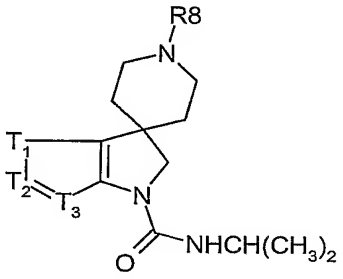
Table CLXII provides 345 compounds of formula Iao



(Iao)

wherein T1 is S, T2 is CR^{4e} and T3 is CR^{4e} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

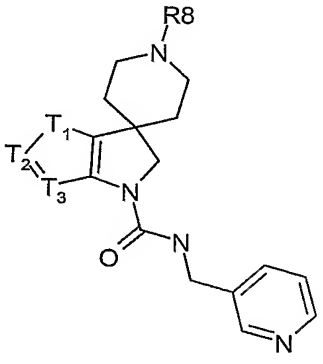
Table CLXIII provides 345 compounds of formula Iap



(Iap)

wherein T1 is S, T2 is CR^{4e} and T3 is CR^{4e} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

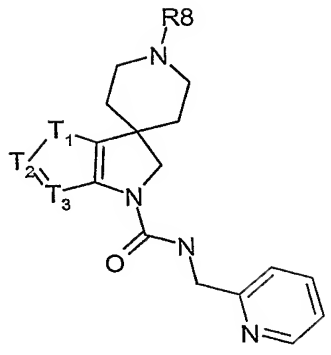
Table CLXIV provides 345 compounds of formula Iaq



(Iaq)

wherein T1 is S, T2 is CR^{4e} and T3 is CR^{4e} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

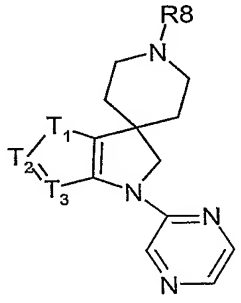
Table CLXV provides 345 compounds of formula Iar



(Iar)

wherein T1 is S, T2 is CR^{4e} and T3 is CR^{4e} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

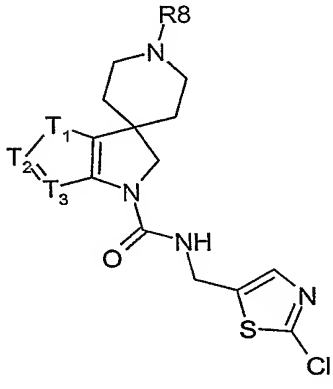
Table CLXVI provides 345 compounds of formula Ias



(Ias)

wherein T1 is S, T2 is CR^{4e} and T3 is CR^{4e} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

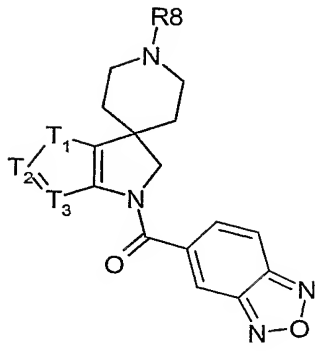
Table CLXVII provides 345 compounds of formula Iat



(Iat)

wherein T1 is S, T2 is CR^{4e} and T3 is CR^{4e} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Table CLXVIII provides 345 compounds of formula Iau



(Iau)

wherein T1 is S, T2 is CR^{4e} and T3 is CR^{4e} and the values of R^8, R^{4e} and R^{4f} are given in Table 2.

Mass spectra data were obtained for selected compounds of Tables I to CLXVIII using LCMS: LC5: 254nm - gradient 10% A to 100% B A=H2O+0.01%HCOOH B=CH3CN/CH3OH+0.01%HCOOH positive electrospray 150-1000 m/z.

The data are shown in Table 3.

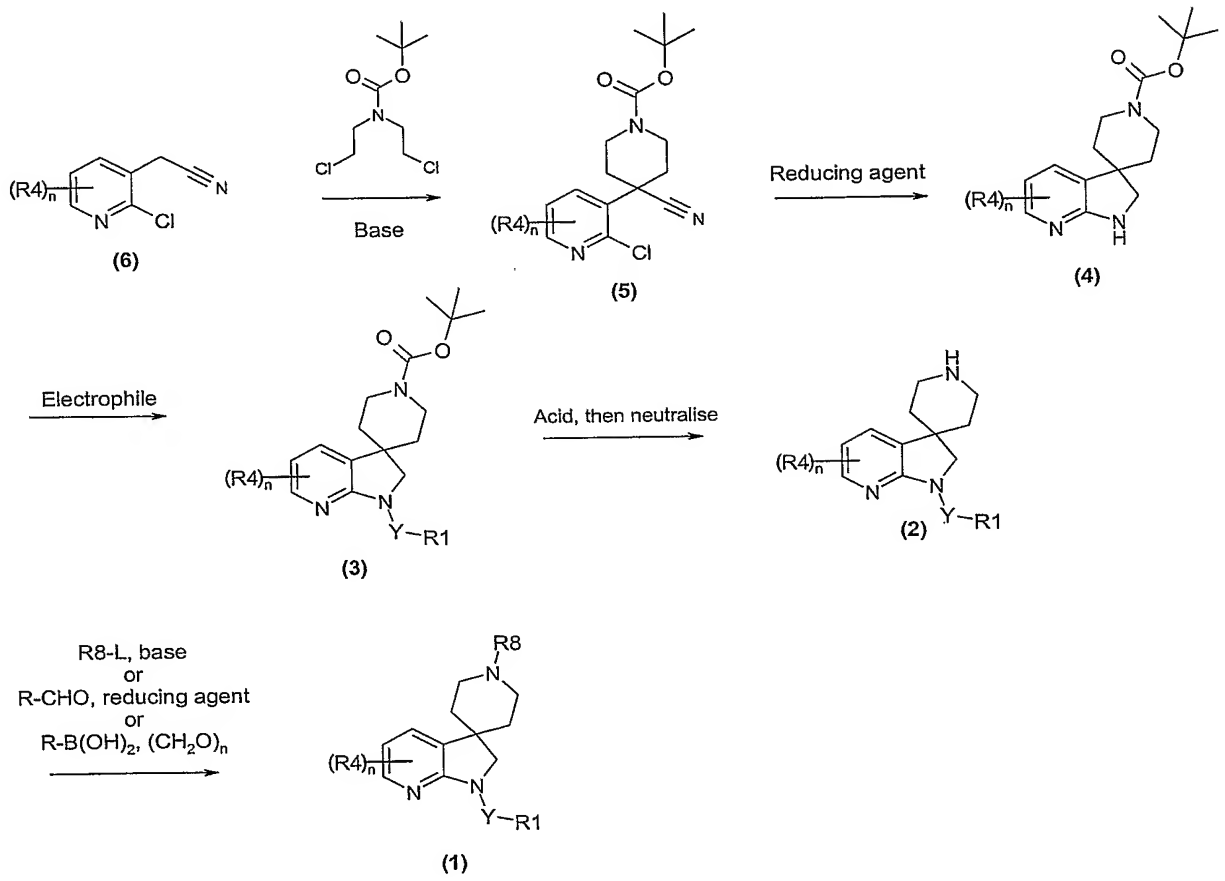
Table 3

Compound	LCMS (Ret. Time, min)	LCMS (M+H)
III -3	2'12	479
III -6	2'16	513
III –7	2'23	529
III -210	2'26	513
III –213	2'38	547
III –214	2'42	563
III –325	2'23	547
III –328	2'48	581
III –329	2'43	597
V-3	2'46	547
V-6	2'59	581
V-7	2'63	597
XLV-3	1'91	479
XLV-6	2'02	513
XLV-7	1'74	529
LXIV-3	1'77	382

LXVI-3	1'98	479
LXVIII-3	2'24	513
LXIX-3	2'30	603
LXXX-3	1'68	445
CL-3	m.p. 81-82	484

The compounds of the invention may be made in a variety of ways. For example as shown in Scheme I.

SCHEME I



Thus a compound of formula 1 may be synthesised from compounds of formula 2 by reaction with an alkylating agent of the formula R8-L, where L is chloride, bromide, iodide or a sulfonate (e.g. mesylate or tosylate) or similar leaving group at a temperature of between ambient temperature and 100°C, typically 65°C, in an organic solvent such as dichloromethane, chloroform or 1,2-dichloroethane in the presence of a tertiary amine base

such as triethylamine or diisopropylethylamine and optionally catalysed by halide salts such as sodium iodide, potassium iodide or tetrabutylammonium iodide.

Alternatively, a compound of formula 2 may be reacted with an aldehyde of the formula RCHO at a temperature between ambient temperature and 100°C in an organic solvent such as tetrahydrofuran or ethanol or mixtures of solvents in the presence of a reducing agent such as borane-pyridine complex, sodium borohydride, sodium (triacetoxy)borohydride, sodium cyanoborohydride or such like, to produce a compound of formula 1 where R8 is CH_2-R.

Alternatively, a compound of formula 2 may be reacted with paraformaldehyde and a boronic acid of the formula R-$B(OH)_2$ at a temperature between ambient temperature and 100°C in an organic solvent such as ethanol, 1,4-dioxane or water to produce a compound of formula 1 where R8 is CH_2-R.

A compound of formula 2 may be obtained from a compound of formula 3 by reaction with an acid such as trifluoroacetic acid at ambient temperature in an organic solvent such as dichloromethane, chloroform or 1,2-dichloroethane followed by neutralisation of the reaction mixture with an aqueous solution of an inorganic base such as sodium carbonate, sodium bicarbonate or similar compound.

Compounds of formula 3 may be obtained from compounds of formula 4 by reaction with a suitable electrophilic species. Compounds of formula 3 where Y is a carbonyl group may be formed by the reaction of compounds of formula 4 with a carboxylic acid derivative of formula R1-C(O)-Z where Z is chloride, hydroxy, alkoxy or acyloxy at a temperature between 0°C and 150°C optionally in an organic solvent such as dichloromethane, chloroform or 1,2-dichloroethane, optionally in the presence of a tertiary amine base such as triethylamine or diisopropylethylamine and optionally in the presence of a coupling agent such as dicyclohexylcarbodiimide. Compounds of formula 3 where Y is a carbonyl group and R1 is an amino substituent of formula R'-NH- may be formed by the reaction of compounds of formula 4 with an isocyanate of formula R'-N=C=O under similar conditions. Compounds of formula 3 where Y is a group of formula $S(O)_q$ may be formed from compounds of formula 4 by treatment with compounds of formula of R1-$S(O)_q$-Cl under similar conditions. Compounds of formula 3 where Y is a thiocarbonyl group and R1 is an amino substituent of formula R'-NH- may be formed by the reaction of compounds of formula 3 with an isothiocyanate of formula R'-N=C=S under similar conditions. Alternatively compounds of

formula 3 where Y is a thiocarbonyl group and R1 is a carbon substituent may be formed by treatment of compounds of formula 3 where Y is a carbonyl group and R1 is a carbon substituent with a suitable thionating agent such as Lawesson's reagent.

In the above procedures, acid derivatives of the formula R1-C(O)-Z, isocyanates of formula R'-N=C=O, isothiocyanates of formula R'-N=C=S and sulfur electrophiles of formula R1-$S(O)_q$-Cl are either known compounds or may be formed from known compounds by known methods by a person skilled in the art.

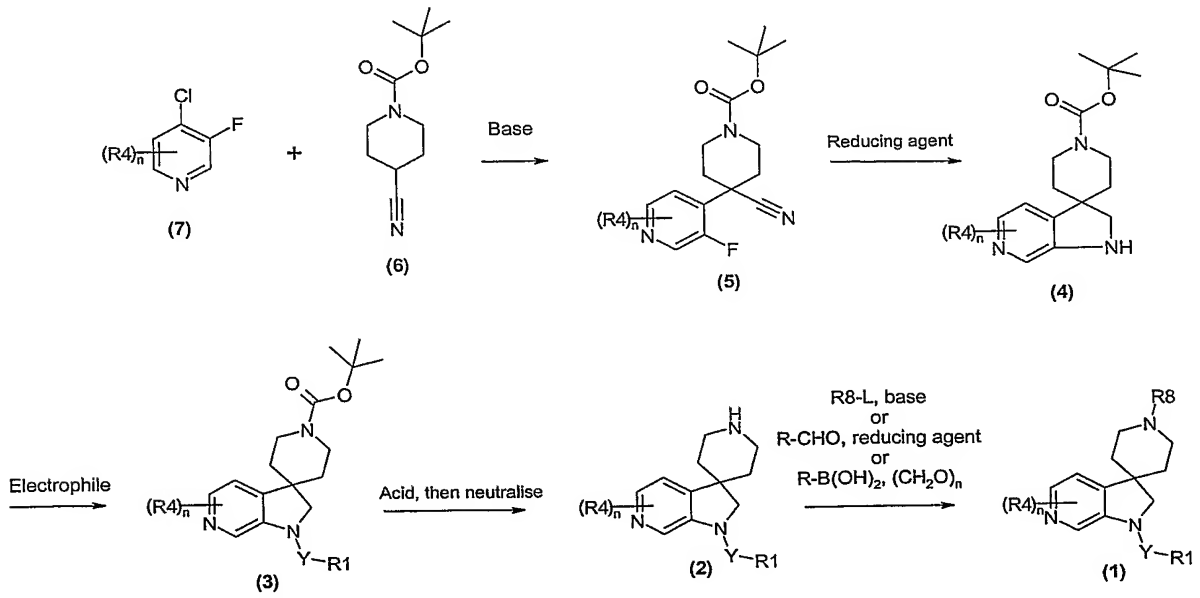
Compounds of formula 4 may be obtained from compounds of formula 5 by reaction with a suitable reducing agent such as lithium-tri-tert-butoxyaluminohydride or similar hydrides or alkoxyhydrides in an organic solvent such as in dioxane or at temperature of between 100°C and 125°C, following the procedure described in WO-0027845.

Compounds of formula 5 may be obtained from compounds of formula 6, following the procedure described in WO00/27845.

Compounds of formula 6 may be obtained following the procedure described by Bremner et al. in Synthesis 1991, 528.

Alternatively compounds of formula 1 may be made by the reactions summarised in Scheme II

SCHEME II



Thus a compound of formula 1 may be synthesised from compounds of formula 2 by reaction with an alkylating agent of the formula R8-L, where L is chloride, bromide, iodide or a sulfonate (e.g. mesylate or tosylate) or similar leaving group at a temperature of between ambient temperature and 100°C, typically 65°C, in an organic solvent such as dichloromethane, chloroform or 1,2-dichloroethane in the presence of a tertiary amine base such as triethylamine or diisopropylethylamine and optionally catalysed by halide salts such as sodium iodide, potassium iodide or tetrabutylammonium iodide.

Alternatively, a compound of formula 2 may be reacted with an aldehyde of the formula RCHO at a temperature between ambient temperature and 100°C in an organic solvent such as tetrahydrofuran or ethanol or mixtures of solvents in the presence of a reducing agent such as borane-pyridine complex, sodium borohydride, sodium (triacetoxy)borohydride, sodium cyanoborohydride or such like, to produce a compound of formula 1 where R8 is CH_2-R.

Alternatively, a compound of formula 2 may be reacted with paraformaldehyde and a boronic acid of the formula R-$B(OH)_2$ at a temperature between ambient temperature and 100°C in an organic solvent such as ethanol, 1,4-dioxane or water to produce a compound of formula 1 where R8 is CH_2-R.

A compound of formula 2 may be obtained from a compound of formula 3 by reaction with an acid such as trifluoroacetic acid at ambient temperature in an organic solvent such as dichloromethane, chloroform or 1,2-dichloroethane followed by neutralisation of the reaction mixture with an aqueous solution of an inorganic base such as sodium carbonate, sodium bicarbonate or similar compound.

Compounds of formula 3 may be obtained from compounds of formula 4 by reaction with a suitable electrophilic species. Compounds of formula 3 where Y is a carbonyl group may be formed by the reaction of compounds of formula 4 with a carboxylic acid derivative of formula R1-C(O)-Z where Z is chloride, hydroxy, alkoxy or acyloxy at a temperature between 0°C and 150°C optionally in an organic solvent such as dichloromethane, chloroform or 1,2-dichloroethane, optionally in the presence of a tertiary amine base such as triethylamine or diisopropylethylamine and optionally in the presence of a coupling agent such as dicyclohexylcarbodiimide. Compounds of formula 3 where Y is a carbonyl group and R1 is an amino substituent of formula R'-NH- may be formed by the reaction of compounds of formula 4 with an isocyanate of formula R'-N=C=O under similar conditions. Compounds

of formula 3 where Y is a group of formula $S(O)_q$ may be formed from compounds of formula 4 by treatment with compounds of formula of R1-$S(O)_q$-Cl under similar conditions. Compounds of formula 3 where Y is a thiocarbonyl group and R1 is an amino substituent of formula R'-NH- may be formed by the reaction of compounds of formula 3 with an isothiocyanate of formula R'-N=C=S under similar conditions. Alternatively compounds of formula 3 where Y is a thiocarbonyl group and R1 is a carbon substituent may be formed by treatment of compounds of formula 3 where Y is a carbonyl group and R1 is a carbon substituent with a suitable thionating agent such as Lawesson's reagent.

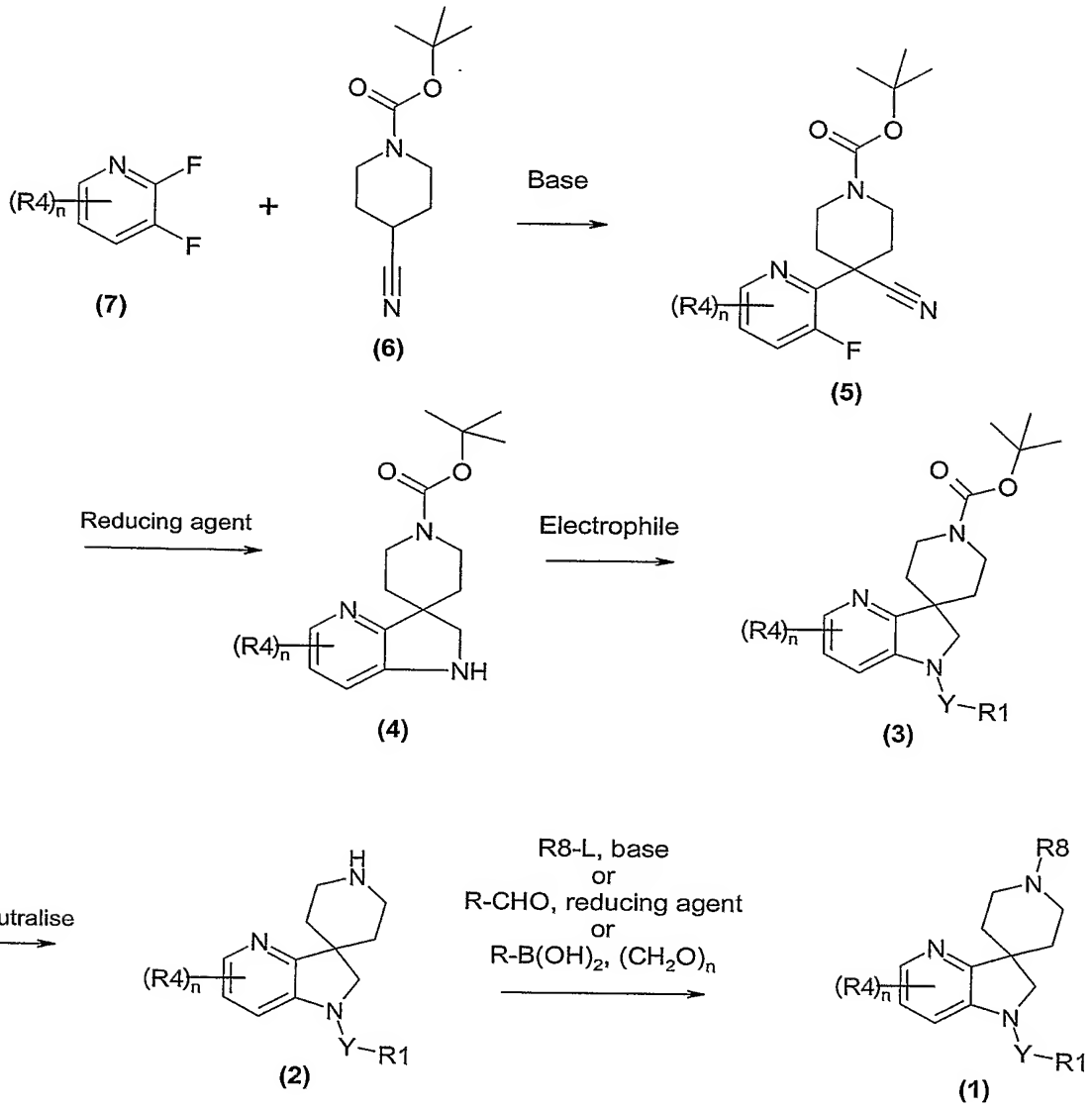
In the above procedures, acid derivatives of the formula R1-C(O)-Z, isocyanates of formula R'-N=C=O, isothiocyanates of formula R'-N=C=S and sulfur electrophiles of formula R1-$S(O)_q$-Cl are either known compounds or may be formed from known compounds by known methods by a person skilled in the art.

Compounds of formula 4 may be obtained from compounds of formula 5 by reaction with a suitable reducing agent such as lithium-tri-tert-butoxyaluminohydride or similar hydrides or alkoxyhydrides in an organic solvent such as in dioxane or at temperature of between 100°C and 125°C, following the procedure described in WO00/27845.

Compounds of formula 5 may be obtained from compounds of formula 6 and 7, following known procedures.

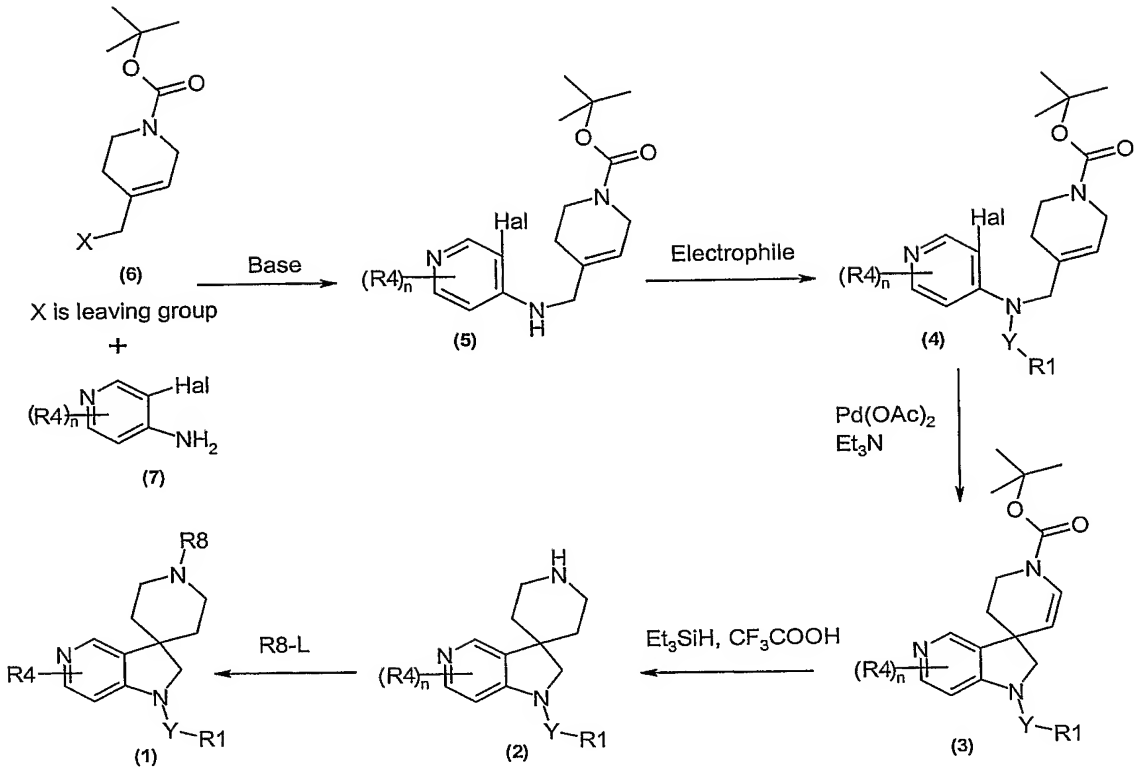
Compounds of formula 1 may also be made by the routes described in scheme III:

SCHEME III



Further compounds of formula I may be made by the route of Scheme IV.

SCHEME IV



A compound of formula 1 may be synthesised from compounds of formula 2 by reaction with an alkylating agent of the formula R8-L, where L is chloride, bromide, iodide or a sulfonate (e.g. mesylate or tosylate) or similar leaving group at a temperature of between ambient temperature and 100°C, typically ambient temperature, in an organic solvent such as acetonitrile, dimethylformamide, dichloromethane, chloroform or 1,2-dichloroethane in the presence of a tertiary amine base such as triethylamine or diisopropylethylamine and optionally catalysed by halide salts such as sodium iodide, potassium iodide or tetrabutylammonium iodide.

A compound of formula 2 may be obtained from a compound of formula 3 by reaction with an acid such as trifluoroacetic acid and a reducing agent such as triethylsilane at ambient temperature in an organic solvent such as dichloromethane, chloroform or 1,2-dichloroethane followed by neutralisation of the reaction mixture with an aqueous solution of an inorganic base such as sodium carbonate, sodium bicarbonate or similar compound.

A compound of formula 3 may be obtained by cyclising a compound of formula 4 under Heck conditions in the presence of a catalyst such as palladium acetate, optionally a ligand such as triphenylphosphine or/and an additive such as tetrabutylammonium bromide

and a base such as triethylamine in an organic solvent such as tetrahydrofuran, acetonitrile or dimethylformamide at a temperature of between 50°C to 140°C.

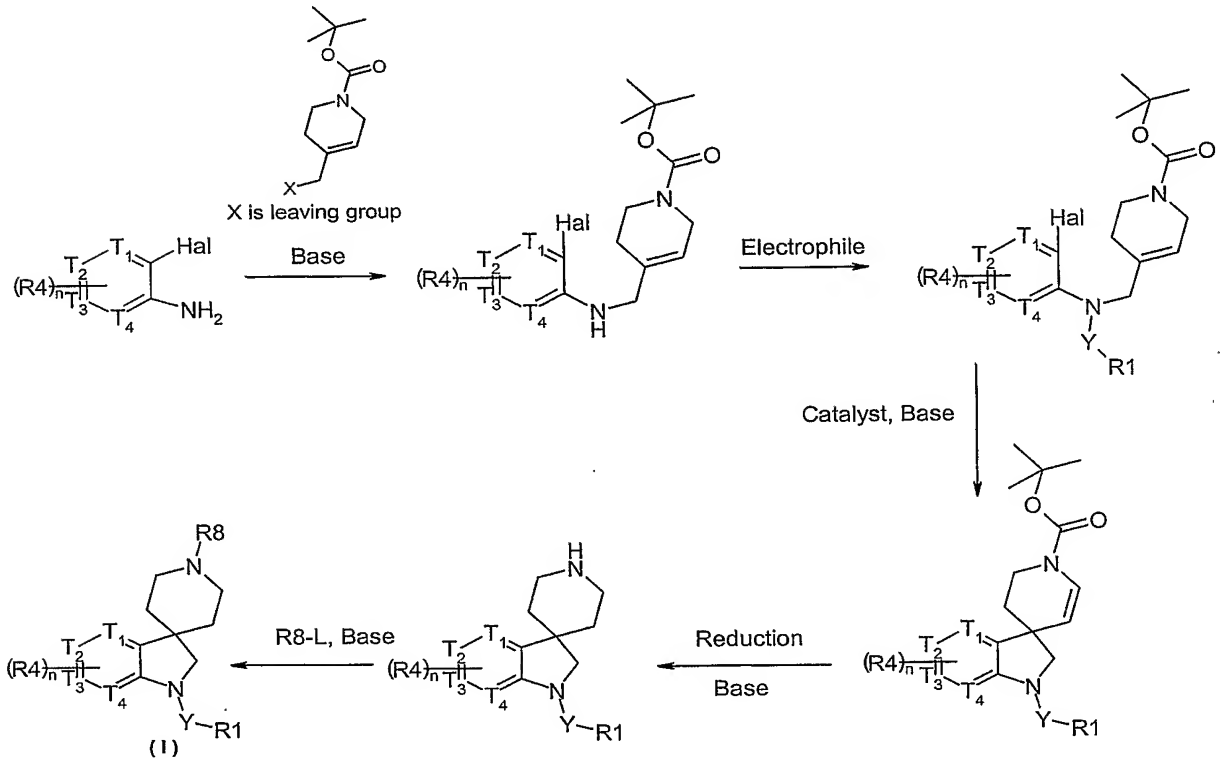
Compounds of formula 4 may be obtained from compounds of formula 5 by reaction with a suitable electrophilic species. Compounds of formula 4 where Y is a carbonyl group may be formed by the reaction of compounds of formula 5 with a carboxylic acid derivative of formula R1-C(O)-Z where Z is chloride, hydroxy, alkoxy or acyloxy at a temperature between 0°C and 150°C optionally in an organic solvent such as dichloromethane, chloroform or 1,2-dichloroethane, optionally in the presence of a tertiary amine base such as triethylamine or diisopropylethylamine and optionally in the presence of a coupling agent such as dicyclohexylcarbodiimide. Compounds of formula 4 where Y is a carbonyl group and R1 is an amino substituent of formula R'-NH- may be formed by the reaction of compounds of formula 5 with an isocyanate of formula R'-N=C=O under similar conditions. Compounds of formula 1 where Y is a group of formula $S(O)_q$ may be formed from compounds of formula 2b by treatment with compounds of formula of R1-$S(O)_q$-Cl under similar conditions. Compounds of formula 4 where Y is a thiocarbonyl group and R1 is an amino substituent of formula R'-NH- may be formed by the reaction of compounds of formula 5 with an isothiocyanate of formula R'-N=C=S under similar conditions. Alternatively compounds of formula 4 where Y is a thiocarbonyl group and R1 is a carbon substituent may be formed by treatment of compounds of formula 4 where Y is a carbonyl group and R1 is a carbon substituent with a suitable thionating agent such as Lawesson's reagent.
In the above procedures, acid derivatives of the formula R1-C(O)-Z, isocyanates of formula R'-N=C=O, isothiocyanates of formula R'-N=C=S and sulfur electrophiles of formula R1-$S(O)_q$-Cl are either known compounds or may be formed from known compounds by known methods by a person skilled in the art.

Compounds of formula 5 may be synthesised by alkylating a compound of formula 7 with a compound of formula 6 in the presence of a base such as sodium hydride, lithium aluminium hydride or potassium tertbutoxide at a temperature of between –78°C to 100°C in an organic solvent such as tetrahydrofuran or dimethyformamide. Compounds of formula 5 and 6 are either known compounds or may be formed from known compounds by known methods by a person skilled in the art.

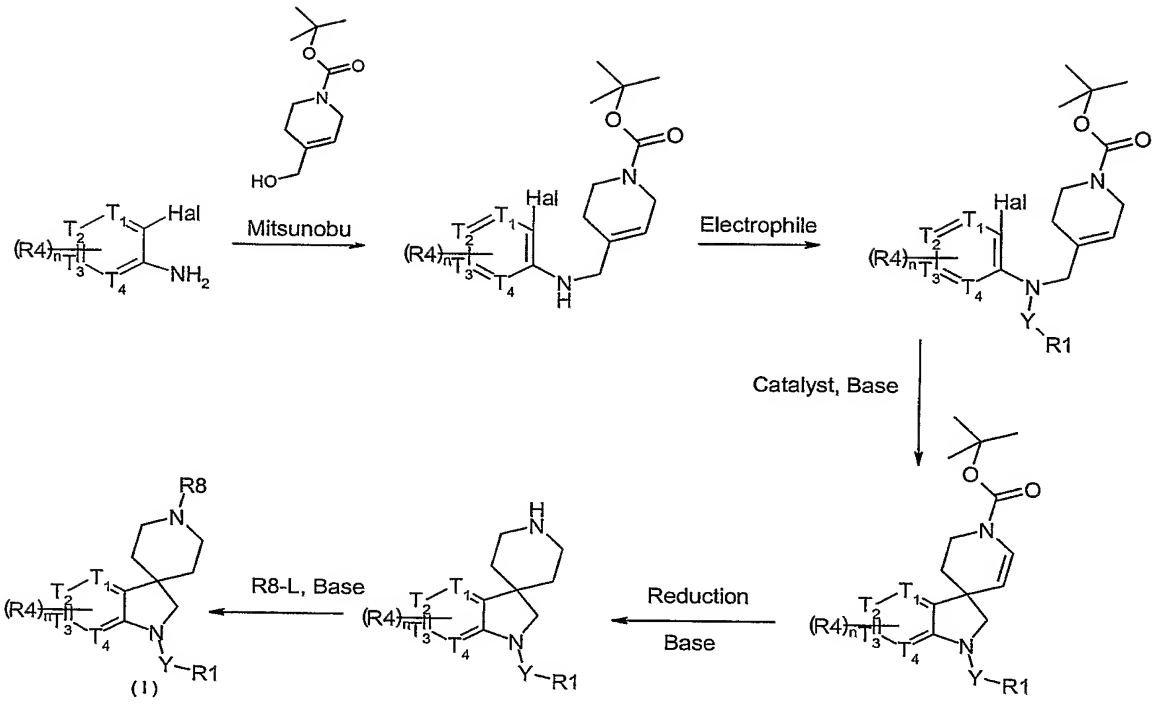
Certain compounds of formula 2, 3 and 4 are novel compounds and as such form a further aspect of the invention.

Compounds where the ring T is a heteroaromatic ring (such as pyrimidine or thiophene) may be prepared according to the synthetic routes described for instance in Organic Reactions (New York) (2002), 60, 157,either by route shown in scheme V or scheme VI (both based on intramolecular Heck reactions):

Scheme V



Scheme VI



The above methods, particularly scheme V may be varied according to the knowledge of the skilled person. Thus for example compounds of formula 1 where the ring T is a thiophene ring may be synthesised by the method outlined in Scheme VII.

Thus, a compound of formula 1 may be synthesised by alkylating a compound of formula 2 with a reagent of formula R8-L by methods known *per se*.

A compound of formula 2 may be obtained by reacting a compound of formula 3 with a reducing agent such as triethylsilane, sodium borohydride, sodium cyanoborohydride or borane in the presence of an acid such as trifluoroacetic acid in an organic solvent such as dichloromethane at a temperature of between –10°C to 80 °C.

A compound of formula 3 may be synthesised from a compound of formula 4 by reacting with a suitable electrophilic species by methods known *per se*.

A compound of formula 4 may be prepared from a compound of formula 5 by treatment with a suitable base such as potassium carbonate at a temperature of between 0°C to 80°C in an organic solvent such as methanol or ethanol in combination with water.

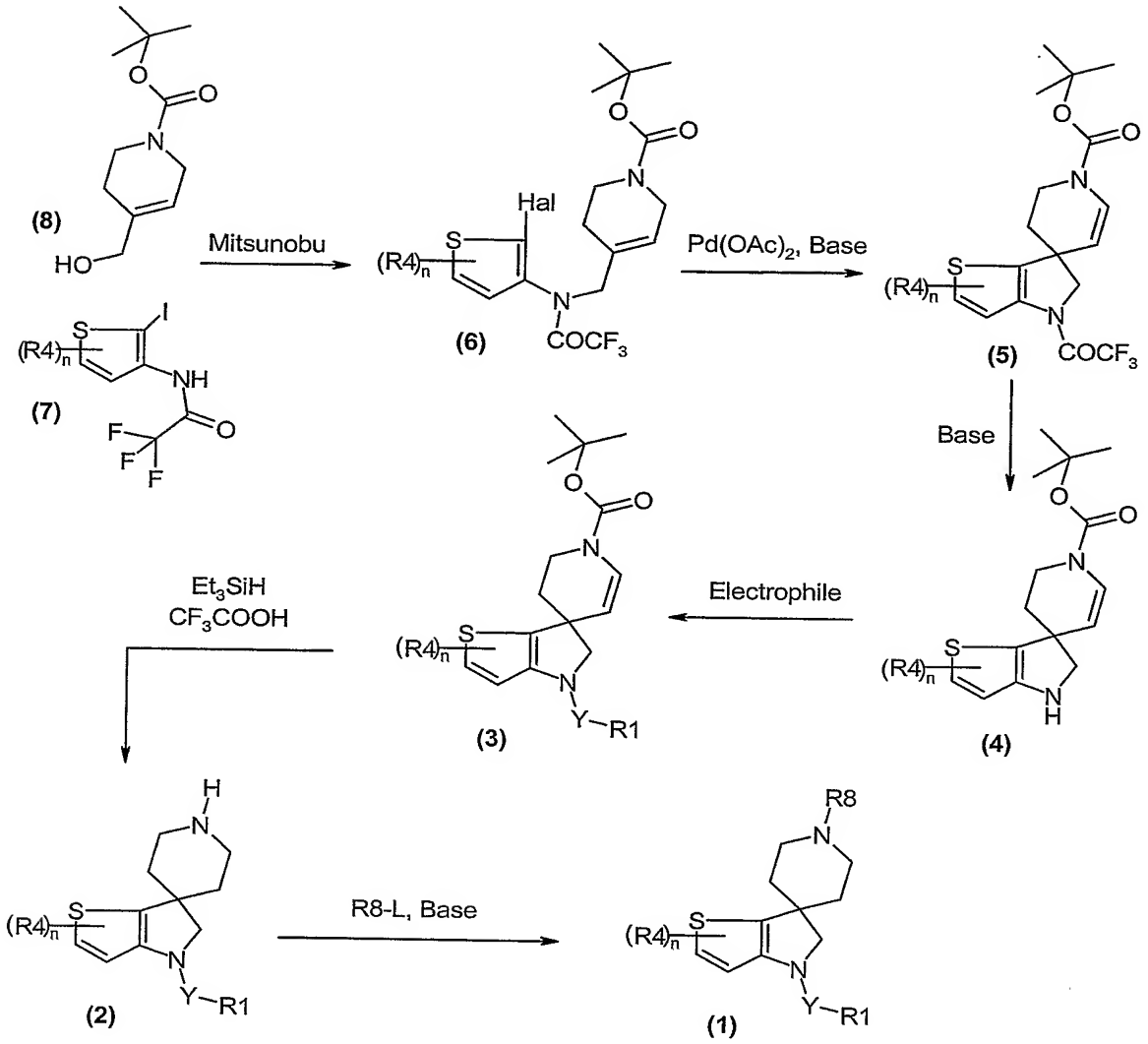
A compound of formula 5 may be synthesised by cyclising a compound of formula 6 under Heck conditions, typically in the presence of a catalyst such as palladium(II) acetate, optionally a ligand such as triphenylphosphine or/and an additive such as

tetrabutylammonium bromide and a base such as triethylamine in an organic solvent such as tetrahydrofuran, acetonitrile, dimethylformamide, N-methyl-pyrrolidinone or dimethylacetamide at a temperature of between 20°C to 140°C.

Compounds of formula 6 may be synthesised by coupling compounds of formula 7 with the known alcohol 8 (*J. Org. Chem.* **2001**, *66*, 5545-5551) under Mitsunobu conditions, typically using a phosphine such as triphenylphosphine and an azo compound such as diethylazodicarboxylate or diisopropylazodicarboxylate in an organic solvent such as tetrahydrofuran or toluene at a temperature of between 0°C to 80°C.

Compounds of formula 7 are either known compounds or may be formed from known compounds by known methods by a person skilled in the art.

SCHEME VII



The skilled person will readily recognize that other compounds of formula 1 may be prepared using the methods described on Scheme VII.

The compounds of formula (I) can be used to combat and control infestations of insect pests such as Lepidoptera, Diptera, Hemiptera, Thysanoptera, Orthoptera, Dictyoptera, Coleoptera, Siphonaptera, Hymenoptera and Isoptera and also other invertebrate pests, for example, acarine, nematode and mollusc pests. Insects, acarines, nematodes and molluscs are hereinafter collectively referred to as pests. The pests which may be combated and controlled by the use of the invention compounds include those pests associated with agriculture (which term includes the growing of crops for food and fibre products), horticulture and animal husbandry, companion animals, forestry and the storage of products

of vegetable origin (such as fruit, grain and timber); those pests associated with the damage of man-made structures and the transmission of diseases of man and animals; and also nuisance pests (such as flies).

Examples of pest species which may be controlled by the compounds of formula (I) include: *Myzus persicae* (aphid), *Aphis gossypii* (aphid), *Aphis fabae* (aphid), *Lygus* spp. (capsids), *Dysdercus* spp. (capsids), *Nilaparvata lugens* (planthopper), *Nephotettixc incticeps* (leafhopper), *Nezara* spp. (stinkbugs), *Euschistus* spp. (stinkbugs), *Leptocorisa* spp. (stinkbugs), *Frankliniella occidentalis* (thrip), Thrips spp. (thrips), *Leptinotarsa decemlineata* (Colorado potato beetle), *Anthonomus grandis* (boll weevil), *Aonidiella* spp. (scale insects), *Trialeurodes* spp. (white flies), *Bemisia tabaci* (white fly), *Ostrinia nubilalis* (European corn borer), *Spodoptera littoralis* (cotton leafworm), *Heliothis virescens* (tobacco budworm), *Helicoverpa armigera* (cotton bollworm), *Helicoverpa zea* (cotton bollworm), *Sylepta derogata* (cotton leaf roller), *Pieris brassicae* (white butterfly), *Plutella xylostella* (diamond back moth), *Agrotis* spp. (cutworms), *Chilo suppressalis* (rice stem borer), *Locusta migratoria* (locust), *Chortiocetes terminifera* (locust), *Diabrotica* spp. (rootworms), *Panonychus ulmi* (European red mite), *Panonychus citri* (citrus red mite), *Tetranychus urticae* (two-spotted spider mite), *Tetranychus cinnabarinus* (carmine spider mite), *Phyllocoptruta oleivora* (citrus rust mite), *Polyphagotarsonemus latus* (broad mite), *Brevipalpus* spp. (flat mites), *Boophilus microplus* (cattle tick), *Dermacentor variabilis* (American dog tick), *Ctenocephalides felis* (cat flea), *Liriomyza* spp. (leafminer), *Musca domestica* (housefly), *Aedes aegypti* (mosquito), *Anopheles* spp. (mosquitoes), *Culex* spp. (mosquitoes), *Lucillia* spp. (blowflies), *Blattella germanica* (cockroach), *Periplaneta americana* (cockroach), *Blatta orientalis* (cockroach), termites of the Mastotermitidae (for example *Mastotermes* spp.), the Kalotermitidae (for example *Neotermes* spp.), the Rhinotermitidae (for example *Coptotermes formosanus*, *Reticulitermes flavipes*, *R. speratu*, *R. virginicus*, *R. hesperus*, and *R. santonensis*) and the Termitidae (for example *Globitermes sulphureus*), *Solenopsis geminata* (fire ant), *Monomorium pharaonis* (pharaoh's ant), *Damalinia* spp. and *Linognathus* spp. (biting and sucking lice), *Meloidogyne* spp. (root knot nematodes), *Globodera* spp. and *Heterodera* spp. (cyst nematodes), *Pratylenchus* spp. (lesion nematodes), *Rhodopholus* spp. (banana burrowing nematodes), *Tylenchulus* spp.(citrus nematodes), *Haemonchus contortus* (barber pole worm), *Caenorhabditis elegans* (vinegar

eelworm), *Trichostrongylus* spp. (gastro intestinal nematodes) and *Deroceras reticulatum* (slug).

The invention therefore provides a method of combating and controlling insects, acarines, nematodes or molluscs which comprises applying an insecticidally, acaricidally, nematicidally or molluscicidally effective amount of a compound of formula (I), or a composition containing a compound of formula (I), to a pest, a locus of pest, or to a plant susceptible to attack by a pest, The compounds of formula (I) are preferably used against insects, acarines or nematodes.

The term "plant" as used herein includes seedlings, bushes and trees.

In order to apply a compound of formula (I) as an insecticide, acaricide, nematicide or molluscicide to a pest, a locus of pest, or to a plant susceptible to attack by a pest, a compound of formula (I) is usually formulated into a composition which includes, in addition to the compound of formula (I), a suitable inert diluent or carrier and, optionally, a surface active agent (SFA). SFAs are chemicals which are able to modify the properties of an interface (for example, liquid/solid, liquid/air or liquid/liquid interfaces) by lowering the interfacial tension and thereby leading to changes in other properties (for example dispersion, emulsification and wetting). It is preferred that all compositions (both solid and liquid formulations) comprise, by weight, 0.0001 to 95%, more preferably 1 to 85%, for example 5 to 60%, of a compound of formula (I). The composition is generally used for the control of pests such that a compound of formula (I) is applied at a rate of from 0.1g to10kg per hectare, preferably from 1g to 6kg per hectare, more preferably from 1g to 1kg per hectare.

When used in a seed dressing, a compound of formula (I) is used at a rate of 0.0001g to 10g (for example 0.001g or 0.05g), preferably 0.005g to 10g, more preferably 0.005g to 4g, per kilogram of seed.

In another aspect the present invention provides an insecticidal, acaricidal, nematicidal or molluscicidal composition comprising an insecticidally, acaricidally, nematicidally or molluscicidally effective amount of a compound of formula (I) and a suitable carrier or diluent therefor. The composition is preferably an insecticidal, acaricidal, nematicidal or molluscicidal composition.

In a still further aspect the invention provides a method of combating and controlling pests at a locus which comprises treating the pests or the locus of the pests with an insecticidally, acaricidally, nematicidally or molluscicidally effective amount of a

composition comprising a compound of formula (I). The compounds of formula (I) are preferably used against insects, acarines or nematodes.

The compositions can be chosen from a number of formulation types, including dustable powders (DP), soluble powders (SP), water soluble granules (SG), water dispersible granules (WG), wettable powders (WP), granules (GR) (slow or fast release), soluble concentrates (SL), oil miscible liquids (OL), ultra low volume liquids (UL), emulsifiable concentrates (EC), dispersible concentrates (DC), emulsions (both oil in water (EW) and water in oil (EO)), micro-emulsions (ME), suspension concentrates (SC), aerosols, fogging/smoke formulations, capsule suspensions (CS) and seed treatment formulations. The formulation type chosen in any instance will depend upon the particular purpose envisaged and the physical, chemical and biological properties of the compound of formula (I).

Dustable powders (DP) may be prepared by mixing a compound of formula (I) with one or more solid diluents (for example natural clays, kaolin, pyrophyllite, bentonite, alumina, montmorillonite, kieselguhr, chalk, diatomaceous earths, calcium phosphates, calcium and magnesium carbonates, sulphur, lime, flours, talc and other organic and inorganic solid carriers) and mechanically grinding the mixture to a fine powder.

Soluble powders (SP) may be prepared by mixing a compound of formula (I) with one or more water-soluble inorganic salts (such as sodium bicarbonate, sodium carbonate or magnesium sulphate) or one or more water-soluble organic solids (such as a polysaccharide) and, optionally, one or more wetting agents, one or more dispersing agents or a mixture of said agents to improve water dispersibility/solubility. The mixture is then ground to a fine powder. Similar compositions may also be granulated to form water soluble granules (SG).

Wettable powders (WP) may be prepared by mixing a compound of formula (I) with one or more solid diluents or carriers, one or more wetting agents and, preferably, one or more dispersing agents and, optionally, one or more suspending agents to facilitate the dispersion in liquids. The mixture is then ground to a fine powder. Similar compositions may also be granulated to form water dispersible granules (WG).

Granules (GR) may be formed either by granulating a mixture of a compound of formula (I) and one or more powdered solid diluents or carriers, or from pre-formed blank granules by absorbing a compound of formula (I) (or a solution thereof, in a suitable agent) in a porous granular material (such as pumice, attapulgite clays, fuller's earth, kieselguhr, diatomaceous earths or ground corn cobs) or by adsorbing a compound of formula (I) (or a

solution thereof, in a suitable agent) on to a hard core material (such as sands, silicates, mineral carbonates, sulphates or phosphates) and drying if necessary. Agents which are commonly used to aid absorption or adsorption include solvents (such as aliphatic and aromatic petroleum solvents, alcohols, ethers, ketones and esters) and sticking agents (such as polyvinyl acetates, polyvinyl alcohols, dextrins, sugars and vegetable oils). One or more other additives may also be included in granules (for example an emulsifying agent, wetting agent or dispersing agent).

Dispersible Concentrates (DC) may be prepared by dissolving a compound of formula (I) in water or an organic solvent, such as a ketone, alcohol or glycol ether. These solutions may contain a surface active agent (for example to improve water dilution or prevent crystallisation in a spray tank).

Emulsifiable concentrates (EC) or oil-in-water emulsions (EW) may be prepared by dissolving a compound of formula (I) in an organic solvent (optionally containing one or more wetting agents, one or more emulsifying agents or a mixture of said agents). Suitable organic solvents for use in ECs include aromatic hydrocarbons (such as alkylbenzenes or alkylnaphthalenes, exemplified by SOLVESSO 100, SOLVESSO 150 and SOLVESSO 200; SOLVESSO is a Registered Trade Mark), ketones (such as cyclohexanone or methylcyclohexanone) and alcohols (such as benzyl alcohol, furfuryl alcohol or butanol), N-alkylpyrrolidones (such as N-methylpyrrolidone or N-octylpyrrolidone), dimethyl amides of fatty acids (such as C_8-C_{10} fatty acid dimethylamide) and chlorinated hydrocarbons. An EC product may spontaneously emulsify on addition to water, to produce an emulsion with sufficient stability to allow spray application through appropriate equipment. Preparation of an EW involves obtaining a compound of formula (I) either as a liquid (if it is not a liquid at room temperature, it may be melted at a reasonable temperature, typically below 70°C) or in solution (by dissolving it in an appropriate solvent) and then emulsifiying the resultant liquid or solution into water containing one or more SFAs, under high shear, to produce an emulsion. Suitable solvents for use in EWs include vegetable oils, chlorinated hydrocarbons (such as chlorobenzenes), aromatic solvents (such as alkylbenzenes or alkylnaphthalenes) and other appropriate organic solvents which have a low solubility in water.

Microemulsions (ME) may be prepared by mixing water with a blend of one or more solvents with one or more SFAs, to produce spontaneously a thermodynamically stable isotropic liquid formulation. A compound of formula (I) is present initially in either the

water or the solvent/SFA blend. Suitable solvents for use in MEs include those hereinbefore described for use in in ECs or in EWs. An ME may be either an oil-in-water or a water-in-oil system (which system is present may be determined by conductivity measurements) and may be suitable for mixing water-soluble and oil-soluble pesticides in the same formulation. An ME is suitable for dilution into water, either remaining as a microemulsion or forming a conventional oil-in-water emulsion.

Suspension concentrates (SC) may comprise aqueous or non-aqueous suspensions of finely divided insoluble solid particles of a compound of formula (I). SCs may be prepared by ball or bead milling the solid compound of formula (I) in a suitable medium, optionally with one or more dispersing agents, to produce a fine particle suspension of the compound. One or more wetting agents may be included in the composition and a suspending agent may be included to reduce the rate at which the particles settle. Alternatively, a compound of formula (I) may be dry milled and added to water, containing agents hereinbefore described, to produce the desired end product.

Aerosol formulations comprise a compound of formula (I) and a suitable propellant (for example *n*-butane). A compound of formula (I) may also be dissolved or dispersed in a suitable medium (for example water or a water miscible liquid, such as *n*-propanol) to provide compositions for use in non-pressurised, hand-actuated spray pumps.

A compound of formula (I) may be mixed in the dry state with a pyrotechnic mixture to form a composition suitable for generating, in an enclosed space, a smoke containing the compound.

Capsule suspensions (CS) may be prepared in a manner similar to the preparation of EW formulations but with an additional polymerisation stage such that an aqueous dispersion of oil droplets is obtained, in which each oil droplet is encapsulated by a polymeric shell and contains a compound of formula (I) and, optionally, a carrier or diluent therefor. The polymeric shell may be produced by either an interfacial polycondensation reaction or by a coacervation procedure. The compositions may provide for controlled release of the compound of formula (I) and they may be used for seed treatment. A compound of formula (I) may also be formulated in a biodegradable polymeric matrix to provide a slow, controlled release of the compound.

A composition may include one or more additives to improve the biological performance of the composition (for example by improving wetting, retention or distribution

on surfaces; resistance to rain on treated surfaces; or uptake or mobility of a compound of formula (I)). Such additives include surface active agents, spray additives based on oils, for example certain mineral oils or natural plant oils (such as soy bean and rape seed oil), and blends of these with other bio-enhancing adjuvants (ingredients which may aid or modify the action of a compound of formula (I)).

A compound of formula (I) may also be formulated for use as a seed treatment, for example as a powder composition, including a powder for dry seed treatment (DS), a water soluble powder (SS) or a water dispersible powder for slurry treatment (WS), or as a liquid composition, including a flowable concentrate (FS), a solution (LS) or a capsule suspension (CS). The preparations of DS, SS, WS, FS and LS compositions are very similar to those of, respectively, DP, SP, WP, SC and DC compositions described above. Compositions for treating seed may include an agent for assisting the adhesion of the composition to the seed (for example a mineral oil or a film-forming barrier).

Wetting agents, dispersing agents and emulsifying agents may be surface SFAs of the cationic, anionic, amphoteric or non-ionic type.

Suitable SFAs of the cationic type include quaternary ammonium compounds (for example cetyltrimethyl ammonium bromide), imidazolines and amine salts.

Suitable anionic SFAs include alkali metals salts of fatty acids, salts of aliphatic monoesters of sulphuric acid (for example sodium lauryl sulphate), salts of sulphonated aromatic compounds (for example sodium dodecylbenzenesulphonate, calcium dodecylbenzenesulphonate, butylnaphthalene sulphonate and mixtures of sodium di-*iso*propyl- and tri-*iso*propyl-naphthalene sulphonates), ether sulphates, alcohol ether sulphates (for example sodium laureth-3-sulphate), ether carboxylates (for example sodium laureth-3-carboxylate), phosphate esters (products from the reaction between one or more fatty alcohols and phosphoric acid (predominately mono-esters) or phosphorus pentoxide (predominately di-esters), for example the reaction between lauryl alcohol and tetraphosphoric acid; additionally these products may be ethoxylated), sulphosuccinamates, paraffin or olefine sulphonates, taurates and lignosulphonates.

Suitable SFAs of the amphoteric type include betaines, propionates and glycinates.

Suitable SFAs of the non-ionic type include condensation products of alkylene oxides, such as ethylene oxide, propylene oxide, butylene oxide or mixtures thereof, with fatty alcohols (such as oleyl alcohol or cetyl alcohol) or with alkylphenols (such as octylphenol,

nonylphenol or octylcresol); partial esters derived from long chain fatty acids or hexitol anhydrides; condensation products of said partial esters with ethylene oxide; block polymers (comprising ethylene oxide and propylene oxide); alkanolamides; simple esters (for example fatty acid polyethylene glycol esters); amine oxides (for example lauryl dimethyl amine oxide); and lecithins.

Suitable suspending agents include hydrophilic colloids (such as polysaccharides, polyvinylpyrrolidone or sodium carboxymethylcellulose) and swelling clays (such as bentonite or attapulgite).

A compound of formula (I) may be applied by any of the known means of applying pesticidal compounds. For example, it may be applied, formulated or unformulated, to the pests or to a locus of the pests (such as a habitat of the pests, or a growing plant liable to infestation by the pests) or to any part of the plant, including the foliage, stems, branches or roots, to the seed before it is planted or to other media in which plants are growing or are to be planted (such as soil surrounding the roots, the soil generally, paddy water or hydroponic culture systems), directly or it may be sprayed on, dusted on, applied by dipping, applied as a cream or paste formulation, applied as a vapour or applied through distribution or incorporation of a composition (such as a granular composition or a composition packed in a water-soluble bag) in soil or an aqueous environment.

A compound of formula (I) may also be injected into plants or sprayed onto vegetation using electrodynamic spraying techniques or other low volume methods, or applied by land or aerial irrigation systems.

Compositions for use as aqueous preparations (aqueous solutions or dispersions) are generally supplied in the form of a concentrate containing a high proportion of the active ingredient, the concentrate being added to water before use. These concentrates, which may include DCs, SCs, ECs, EWs, MEs SGs, SPs, WPs, WGs and CSs, are often required to withstand storage for prolonged periods and, after such storage, to be capable of addition to water to form aqueous preparations which remain homogeneous for a sufficient time to enable them to be applied by conventional spray equipment. Such aqueous preparations may contain varying amounts of a compound of formula (I) (for example 0.0001 to 10%, by weight) depending upon the purpose for which they are to be used.

A compound of formula (I) may be used in mixtures with fertilisers (for example nitrogen-, potassium- or phosphorus-containing fertilisers). Suitable formulation types

include granules of fertiliser. The mixtures suitably contain up to 25% by weight of the compound of formula (I).

The invention therefore also provides a fertiliser composition comprising a fertiliser and a compound of formula (I).

The compositions of this invention may contain other compounds having biological activity, for example micronutrients or compounds having fungicidal activity or which possess plant growth regulating, herbicidal, insecticidal, nematicidal or acaricidal activity.

The compound of formula (I) may be the sole active ingredient of the composition or it may be admixed with one or more additional active ingredients such as a pesticide, fungicide, synergist, herbicide or plant growth regulator where appropriate. An additional active ingredient may: provide a composition having a broader spectrum of activity or increased persistence at a locus; synergise the activity or complement the activity (for example by increasing the speed of effect or overcoming repellency) of the compound of formula (I); or help to overcome or prevent the development of resistance to individual components. The particular additional active ingredient will depend upon the intended utility of the composition. Examples of suitable pesticides include the following:

a) Pyrethroids, such as permethrin, cypermethrin, fenvalerate, esfenvalerate, deltamethrin, cyhalothrin (in particular lambda-cyhalothrin), bifenthrin, fenpropathrin, cyfluthrin, tefluthrin, fish safe pyrethroids (for example ethofenprox), natural pyrethrin, tetramethrin, s-bioallethrin, fenfluthrin, prallethrin or 5-benzyl-3-furylmethyl-(E)-(1R,3S)-2,2-dimethyl-3-(2-oxothiolan-3-ylidenemethyl)cyclopropane carboxylate;

b) Organophosphates, such as, profenofos, sulprofos, acephate, methyl parathion, azinphos-methyl, demeton-s-methyl, heptenophos, thiometon, fenamiphos, monocrotophos, profenofos, triazophos, methamidophos, dimethoate, phosphamidon, malathion, chlorpyrifos, phosalone, terbufos, fensulfothion, fonofos, phorate, phoxim, pirimiphos-methyl, pirimiphos-ethyl, fenitrothion, fosthiazate or diazinon;

c) Carbamates (including aryl carbamates), such as pirimicarb, triazamate, cloethocarb, carbofuran, furathiocarb, ethiofencarb, aldicarb, thiofurox, carbosulfan, bendiocarb, fenobucarb, propoxur, methomyl or oxamyl;

d) Benzoyl ureas, such as diflubenzuron, triflumuron, hexaflumuron, flufenoxuron or chlorfluazuron;

e) Organic tin compounds, such as cyhexatin, fenbutatin oxide or azocyclotin;

f) Pyrazoles, such as tebufenpyrad and fenpyroximate;

g) Macrolides, such as avermectins or milbemycins, for example abamectin, emamectin benzoate, ivermectin, milbemycin, spinosad or azadirachtin;

h) Hormones or pheromones;

i) Organochlorine compounds such as endosulfan, benzene hexachloride, DDT, chlordane or dieldrin;

j) Amidines, such as chlordimeform or amitraz;

k) Fumigant agents, such as chloropicrin, dichloropropane, methyl bromide or metam;

l) Chloronicotinyl compounds such as imidacloprid, thiacloprid, acetamiprid, nitenpyram or thiamethoxam;

m) Diacylhydrazines, such as tebufenozide, chromafenozide or methoxyfenozide;

n) Diphenyl ethers, such as diofenolan or pyriproxifen;

o) Indoxacarb;

p) Chlorfenapyr; or

q) Pymetrozine.

In addition to the major chemical classes of pesticide listed above, other pesticides having particular targets may be employed in the composition, if appropriate for the intended utility of the composition. For instance, selective insecticides for particular crops, for example stemborer specific insecticides (such as cartap) or hopper specific insecticides (such as buprofezin) for use in rice may be employed. Alternatively insecticides or acaricides specific for particular insect species/stages may also be included in the compositions (for example acaricidal ovo-larvicides, such as clofentezine, flubenzimine, hexythiazox or tetradifon; acaricidal motilicides, such as dicofol or propargite; acaricides, such as bromopropylate or chlorobenzilate; or growth regulators, such as hydramethylnon, cyromazine, methoprene, chlorfluazuron or diflubenzuron).

Examples of fungicidal compounds which may be included in the composition of the invention are (*E*)-*N*-methyl-2-[2-(2,5-dimethylphenoxymethyl)phenyl]-2-methoxy-iminoacetamide (SSF-129), 4-bromo-2-cyano-*N*,*N*-dimethyl-6-trifluoromethylbenzimidazole-1-sulphonamide, α-[*N*-(3-chloro-2,6-xylyl)-2-methoxyacetamido]-γ-butyrolactone, 4-chloro-2-cyano-*N*,*N*-dimethyl-5-*p*-tolylimidazole-1-sulfonamide (IKF-916, cyamidazosulfamid), 3-5-dichloro-*N*-(3-chloro-1-ethyl-1-methyl-2-oxopropyl)-4-methylbenzamide (RH-7281, zoxamide), *N*-allyl-4,5,-dimethyl-2-trimethylsilylthiophene-3-carboxamide (MON65500), *N*-

(1-cyano-1,2-dimethylpropyl)-2-(2,4-dichlorophenoxy)propionamide (AC382042), *N*-(2-methoxy-5-pyridyl)-cyclopropane carboxamide, acibenzolar (CGA245704), alanycarb, aldimorph, anilazine, azaconazole, azoxystrobin, benalaxyl, benomyl, biloxazol, bitertanol, blasticidin S, bromuconazole, bupirimate, captafol, captan, carbendazim, carbendazim chlorhydrate, carboxin, carpropamid, carvone, CGA41396, CGA41397, chinomethionate, chlorothalonil, chlorozolinate, clozylacon, copper containing compounds such as copper oxychloride, copper oxyquinolate, copper sulphate, copper tallate and Bordeaux mixture, cymoxanil, cyproconazole, cyprodinil, debacarb, di-2-pyridyl disulphide 1,1'-dioxide, dichlofluanid, diclomezine, dicloran, diethofencarb, difenoconazole, difenzoquat, diflumetorim, *O,O*-di-*iso*-propyl-*S*-benzyl thiophosphate, dimefluazole, dimetconazole, dimethomorph, dimethirimol, diniconazole, dinocap, dithianon, dodecyl dimethyl ammonium chloride, dodemorph, dodine, doguadine, edifenphos, epoxiconazole, ethirimol, ethyl(*Z*)-*N*-benzyl-*N*([methyl(methyl-thioethylideneaminooxycarbonyl)amino]thio)-β -alaninate, etridiazole, famoxadone, fenamidone (RPA407213), fenarimol, fenbuconazole, fenfuram, fenhexamid (KBR2738), fenpiclonil, fenpropidin, fenpropimorph, fentin acetate, fentin hydroxide, ferbam, ferimzone, fluazinam, fludioxonil, flumetover, fluoroimide, fluquinconazole, flusilazole, flutolanil, flutriafol, folpet, fuberidazole, furalaxyl, furametpyr, guazatine, hexaconazole, hydroxyisoxazole, hymexazole, imazalil, imibenconazole, iminoctadine, iminoctadine triacetate, ipconazole, iprobenfos, iprodione, iprovalicarb (SZX0722), isopropanyl butyl carbamate, isoprothiolane, kasugamycin, kresoxim-methyl, LY186054, LY211795, LY248908, mancozeb, maneb, mefenoxam, mepanipyrim, mepronil, metalaxyl, metconazole, metiram, metiram-zinc, metominostrobin, myclobutanil, neoasozin, nickel dimethyldithiocarbamate, nitrothal-*iso*propyl, nuarimol, ofurace, organomercury compounds, oxadixyl, oxasulfuron, oxolinic acid, oxpoconazole, oxycarboxin, pefurazoate, penconazole, pencycuron, phenazin oxide, phosetyl-Al, phosphorus acids, phthalide, picoxystrobin (ZA1963), polyoxin D, polyram, probenazole, prochloraz, procymidone, propamocarb, propiconazole, propineb, propionic acid, pyrazophos, pyrifenox, pyrimethanil, pyroquilon, pyroxyfur, pyrrolnitrin, quaternary ammonium compounds, quinomethionate, quinoxyfen, quintozene, sipconazole (F-155), sodium pentachlorophenate, spiroxamine, streptomycin, sulphur, tebuconazole, tecloftalam, tecnazene, tetraconazole, thiabendazole, thifluzamid, 2-(thiocyanomethylthio)benzothiazole, thiophanate-methyl, thiram, timibenconazole, tolclofos-methyl, tolylfluanid, triadimefon, triadimenol, triazbutil,

triazoxide, tricyclazole, tridemorph, trifloxystrobin (CGA279202), triforine, triflumizole, triticonazole, validamycin A, vapam, vinclozolin, zineb and ziram.

The compounds of formula (I) may be mixed with soil, peat or other rooting media for the protection of plants against seed-borne, soil-borne or foliar fungal diseases.

Examples of suitable synergists for use in the compositions include piperonyl butoxide, sesamex, safroxan and dodecyl imidazole.

Suitable herbicides and plant-growth regulators for inclusion in the compositions will depend upon the intended target and the effect required.

An example of a rice selective herbicide which may be included is propanil. An example of a plant growth regulator for use in cotton is PIX™.

Some mixtures may comprise active ingredients which have significantly different physical, chemical or biological properties such that they do not easily lend themselves to the same conventional formulation type. In these circumstances other formulation types may be prepared. For example, where one active ingredient is a water insoluble solid and the other a water insoluble liquid, it may nevertheless be possible to disperse each active ingredient in the same continuous aqueous phase by dispersing the solid active ingredient as a suspension (using a preparation analogous to that of an SC) but dispersing the liquid active ingredient as an emulsion (using a preparation analogous to that of an EW). The resultant composition is a suspoemulsion (SE) formulation.

The invention is illustrated by the following Examples:

EXAMPLE 1

This example illustrate the preparation of compound LXVI-3, 7-aza-1-(2-chloropyridin-4-yl-)carbonyl-1'-[trans-3-(4-chlorophenylallyl]spiro[indoline-3,4'-piperidine]

Step A:

NaH (4.25 g) was slowly added to a solution of 3-chloro-2-pyridylacetonitrile (10 g) in DMSO (140 ml) under nitrogen. The mixture was stirred at room temperature for 1h. A solution of bis-(2-chloro-ethyl)-carbamic acid tert-butyl ester (15.87 g) in DMSO (140 ml) was added and the resulting mixture was stirred at 70°C for 2 hrs. After cooling, the reaction mixture was partitioned between ethyl acetate and water, the combined organic layers were washed with saturated sodium bicarbonate and brine, dried (sodium sulfate), filtered and concentrated in vacuo. The crude product was purified by chromatography [SiO_2; ethyl acetate-hexane (3:7)] to give 12.96 g (61%) of 2-chloro-4'-cyano-3',4',5',6'-tetrahydro-2'H-[3,4']bipyridinyl-1'-carboxylic acid tert-butyl ester as a white solide; MS (ES+) 322/324 ($M+H^+$).

Step B:

A mixture of 2-chloro-4'-cyano-3',4',5',6'-tetrahydro-2'H-[3,4']bipyridinyl-1'-carboxylic acid tert-butyl ester (6 g) and lithium tri-tert-butoxyaluminohydride (72.34 ml), 1M solution in THF) in 1-4-dioxane (90 ml) was refluxed overnight. After cooling, 1 N NaOH (100 ml) and H_2O (100 ml) were added slowly at 0°C. Dichloromethane was added to the mixture. The aqueous phase was extracted twice with dichloromethane and the combined organic layers were washed with saturated sodium bicarbonate, dried (magnesium sulfate), filtered and concentrated in vacuo. The crude product was purified by chromatography [SiO_2; dichloromethane-methanol (95:5)] to give 5.5 g (46%) of 7-Aza- spiro[indoline-3,4'-piperidine]-1'-carboxylic acid tert-butylester; MS (ES+) 290 ($M+H^+$).

Step C:

A mixture of 2-chloro-isonicotinic acid (441 mg), thionyl chloride (0.6 ml), DMF (trace) in toluene (9 ml) was heated to reflux for 2 hrs. After concentration *in vacuo*, the residue was dissolved in 12 ml dichloromethane and added dropwise at 0°C under nitrogen to a mixture of 7-aza- spiro[indoline-3,4'-piperidine]-1'-carboxylic acid tert-butylester, (405 mg), triethylamine (0.86 ml) and dichloromethane ((12 ml). The mixture was stirred at room temperature for 2 hrs. The mixture was diluted in a saturated sodium carbonate solution. The

organic layer was separated and the aqueous phase was extracted twice with dichloromethane and the combined organic layers were washed with saturated sodium bicarbonate, dried (magnesium sulfate), filtered and concentrated in vacuo 630 mg of 7-Aza-1-(2-chloropyridin-4-yl-)carbonyl-1'-carboxylic acid tert-butylester spiro[indoline-3,4'-piperidine; MS (ES+) 429 ($M+H^+$).

Step D:

Trifluoroacetic acid (1.92 ml) was added to a stirred solution of 7-Aza-1-(2-chloropyridin-4-yl-)carbonyl-1'-carboxylic acid tert-butylester spiro[indoline-3,4'-piperidine] (0.62 g) in anhydrous dichloromethane (20 ml) under an atmosphere of nitrogen. The reaction was left as such for 2 h. The reaction was washed with saturated bicarbonate solution and dried over sodium sulphate and concentrated *in vacuo* to yield 427 mg (90%) of 7-aza-1-(2-chloropyridin-4-yl-)carbonyl-spiro[indoline-3,4'-piperidine]; MS (ES+) 329 ($M+H^+$).

Step E:

A solution of 4-chlorocinnamyl chloride (68 mg) in acetonitrile (4 ml) was added slowly to a stirred mixture of 7-Aza-1-(2-chloropyridin-4-yl-)carbonyl-spiro[indoline-3,4'-piperidine]; (100 mg) and potassium carbonate (0.42 g) in acetonitrile (16 ml) under an atmosphere of nitrogen at room. The reaction was heated to 70 °C for 2 hrs. The reaction was diluted in diethylether, washed with H_2O and dried over sodium sulphate and concentrated *in vacuo*. The crude product was purified by chromatography [SiO_2; hexane-ethyl acetate-triethylamine (2:8:0.1)] to give 84 mg (58%) of 7-aza-1-(2-chloropyridin-4-yl-)carbonyl-1'-[trans-3-(4-chlorophenylallyl]spiro[indoline-3,4'-piperidine]; MS (ES+) 479 ($M+H^+$).

EXAMPLE 2

This Example illustrates the preparation of compound XLV-3, 6-Aza-1-(2-chloropyridin-4-yl-)carbonyl-1'-[trans-3-(4-chlorophenylallyl]spiro[indoline-3,4'-piperidine].

Step A:

Potassium hexamethyldisilazane (1.2 ml, 0.5 M solution in toluene) was slowly added to a solution of 4-chloro-3-fluoro-pyridin (0.5 g) and N-Boc-4-Cyano-Piperidin (0.312 g) in 1.5ml toluene at room temperature, under nitrogen. The mixture was stirred at 80°C for 2 hrs. After cooling, the reaction mixture was quenched in 1N HCl. The aqueous phase was extracted twice with toluene and the combined organic were dried over anhydrous

magnesium sulfate and concentrated *in vacuo*. The crude product was purified by chromatography [SiO_2; ethyl acetate-hexane (1:1)] to give 104 mg (90%) of 4-cyano-3'-fluoro-3,4,5,6-tetrahydro-2H-[4,4']bipyridinyl-1-carboxylic acid tert-butyl ester; MS (ES+) 306 ($M+H^+$).

Step B:

A mixture of 4-cyano-3'-fluoro-3,4,5,6-tetrahydro-2H-[4,4']bipyridinyl-1-carboxylic acid tert-butyl ester (1 g) and lithium tri-tert-butoxyaluminohydride (12.7 ml), 1M solution in THF) in 1-4-dioxane (15 ml) was stirred at 130°C (sealed tube) for 1 hr. After cooling, 1 N NaOH (100 ml) and H_2O (100 ml) were added slowly at 0°C. Ethyl acetate was added to the mixture. The aqueous phase was extracted twice with ethyl acetate and the combined organic layers were washed with saturated sodium bicarbonate, dried (magnesium sulfate), filtered and concentrated in vacuo. The crude product was purified by chromatography [SiO_2; hexane-ethyl acetate (7:3)] to give 230 mg g (24%) of 6-aza- spiro[indoline-3,4'-piperidine]-1'-carboxylic acid tert-butylester; MS (ES+) 290 ($M+H^+$).

Step C:

A mixture of 2-chloro-isonicotinic acid (239 mg), thionyl chloride (0.33 ml), DMF (trace) in toluene (5 ml) was heated to reflux for 2 hrs. After concentration *in vacuo*, the residue was dissolved in 2 ml dichloromethane and added dropwise at 0°C under nitrogen to a mixture of 6-aza- spiro[indoline-3,4'-piperidine]-1'-carboxylic acid tert-butylester, (220 mg), triethylamine (0.47 ml) and dichloromethane ((13 ml). The mixture was stirred at room temperature for 1 hr. The mixture was diluted in a saturated sodium carbonate solution. The organic layer was separated and the aqueous phase was extracted twice with dichloromethane and the combined organic layers were washed with saturated sodium bicarbonate, dried (magnesium sulfate), filtered and concentrated in vacuo 340 mg of 6-aza-1-(2-chloropyridin-4-yl-)carbonyl-1'-carboxylic acid tert-butylester spiro[indoline-3,4'-piperidine]; MS (ES+) 429 ($M+H^+$).

Step D:

Trifluoroacetic acid (1 ml) was added to a stirred solution 6-aza-1-(2-chloropyridin-4-yl-)carbonyl-1'-carboxylic acid tert-butylester spiro[indoline-3,4'-piperidine] (0.33 g) in anhydrous dichloromethane (10 ml) under an atmosphere of nitrogen. The reaction was left as such for 2 h. The reaction was washed with saturated bicarbonate solution and dried over

sodium sulphate and concentrated *in vacuo* to yield 210 mg (83%) of 4-aza-1-(2-chloropyridin-4-yl-)carbonyl-spiro[indoline-3,4'-piperidine]; MS (ES+) 329 ($M+H^+$).

Step E:

A solution of 4-chlorocinnamyl chloride (40 mg) in acetonitrile (3 ml) was added slowly to a stirred mixture of 4-aza-1-(2-chloropyridin-4-yl-)carbonyl-spiro[indoline-3,4'-piperidine] (100 mg) and N,N-diisopropyl-ethylamine (0.66 ml) in acetonitrile (13 ml) under an atmosphere of nitrogen at room. The reaction was stirred at room temperature for 2 hrs, heated to reflux for 2 hrs and then stirred overnight at room temperature. The reaction was diluted in diethylether, washed with H_2O, then with brine and dried over sodium sulphate and concentrated *in vacuo*. The crude product was purified by chromatography [SiO_2; ethyl acetate-methanol-triethylamine (9:10:0.1)] to give 72 mg (76% over 3 steps) of 6-aza-1-(2-chloropyridin-4-yl-)carbonyl-1'-[trans-3-(4-chlorophenylallyl]spiro[indoline-3,4'-piperidine]; MS (ES+) 479 ($M+H^+$).

EXAMPLE 3

This Example illustrates the preparation of compound III-210, 6-chloro-4-aza-1-(2-chloropyridin-4-yl-)carbonyl-1'-[trans-3-(4-chlorophenylallyl]spiro [indoline-3,4'-piperidine]

Step A:

Potassium hexamethyldisilazane (1.34 ml, 0.5 M solution in toluene) was slowly added to a solution of 5-Chloro-2,3-difluoro-pyridine (0.1 g) and N-Boc-4-Cyano-Piperidin (0.14 g) in 3 ml toluene at 0°C, under nitrogen. The mixture was stirred at 0°C for 1hr. After cooling, the reaction mixture was quenched in 1N HCl. The aqueous phase was extracted twice with ethyl acetate and the combined organic were washed with water, dried over anhydrous sodium sulfate and concentrated *in vacuo*. The crude product was purified by chromatography [SiO_2; hexane-ethyl acetate-hexane (4:1)] to give 111 mg (49%) of 5-chloro-4'-cyano-3-fluoro-3',4',5',6'-tetrahydro-2'H-[2,4']bipyridinyl-1'-carboxylic acid tert-butyl esteR; MS (ES+) 240 ($M-Boc+ H^+$).

Step B:

A mixture of 5-chloro-4'-cyano-3-fluoro-3',4',5',6'-tetrahydro-2'H-[2,4']bipyridinyl-1'-carboxylic acid tert-butyl ester (0.05 g) and lithium tri-tert-butoxyaluminohydride (0.57 ml), 1M solution in THF) in 1-4-dioxane (0.75 ml) was refluxed under nitrogen for 4 hrs. After cooling, 1 N NaOH and H_2O and ethyl acetate were added slowly to the mixture at 0°C. The

aqueous phase was extracted twice with ethyl acetate and the combined organic layers were washed with saturated sodium bicarbonate, dried (sodium sulfate), filtered and concentrated in vacuo. The crude product was purified by chromatography [SiO_2; hexane-ethyl acetate-triethylamine (75:25:1)] to give 18 mg g (38%) of 6-chloro-4-aza-spiro[indoline-3,4'-piperidine]-1'-carboxylic acid tert-butylester; MS (ES+) 324 ($M+H^+$).

Step C:

A mixture of 2-chloro-isonicotinic acid (324 mg), thionyl chloride (0.43 ml), DMF (trace) in toluene (6.4 ml) was heated to reflux for 2 hrs. After concentration *in vacuo*, the residue was dissolved in 2 ml dichloromethane and added dropwise at 0°C under nitrogen to a mixture of 6-chloro-4-aza-spiro[indoline-3,4'-piperidine]-1'-carboxylic acid tert-butylester, (220 mg), triethylamine (0.6 ml) and dichloromethane ((20 ml). The mixture was stirred at room temperature for 1 hr. The mixture was diluted in a saturated sodium carbonate solution. The organic layer was separated and the aqueous phase was extracted twice with dichloromethane and the combined organic layers were washed with saturated sodium bicarbonate, dried (magnesium sulfate), filtered and concentrated in vacuo 473 mg (102%) of 6-chloro-4-aza-1-(2-chloropyridin-4-yl-)carbonyl-1'-carboxylic acid tert-butylester spiro[indoline-3,4'-piperidine];

MS (ES+) 407 (M - Me2C=CH2+H^+).

Step D:

Trifluoroacetic acid (1.47 ml) was added to a stirred solution 6-chloro-4-aza-1-(2-chloropyridin-4-yl-)carbonyl-1'-carboxylic acid tert-butylester spiro[indoline-3,4'-piperidine] (0.47 g) in anhydrous dichloromethane (15 ml) under an atmosphere of nitrogen. The reaction was left as such for 1 hr. The reaction was washed with saturated bicarbonate solution and dried over sodium sulphate and concentrated *in vacuo* to yield 363 mg (98%) of 6-chloro-4-aza-1-(2-chloropyridin-4-yl-)carbonyl-spiro[indoline-3,4'-piperidine]; MS (ES+) 363 ($M+H^+$).

Step E:

A solution of 4-chlorocinnamyl chloride (165 mg) in acetonitrile (20 ml) was added slowly to a stirred mixture of 6-chloro-4-aza-1-(2-chloropyridin-4-yl-)carbonyl-spiro[indoline-3,4'-piperidine] (300 mg) and N,N-diisopropyl-ethylamine (0.66 ml) in acetonitrile (40 ml) under an atmosphere of nitrogen at room. The reaction was stirred at room temperature for 4 hrs and heated to reflux overnight. The reaction was diluted in diethylether, washed with H_2O, then with brine and dried over sodium sulphate and concentrated *in vacuo*. The crude product

was purified by chromatography [SiO_2; hexane-ethyl acetate-triethylamine (8:2:0.1)] to give 310 mg (73%) of 6-chloro-4-aza-1-(2-chloropyridin-4-yl-)carbonyl-1'-[trans-3-(4-chlorophenylallyl]spiro[indoline-3,4'-piperidine]; MS (ES+) 513 ($M+H^+$).

EXAMPLE 4

This Example illustrates the preparation of compound CL-3, 4-(2-chloropyridin-4-yl)carbonyl-1'-[*trans*-3-(4-chlorophenyl)allyl]spiro[5,6-dihydro-4H-thieno[3,2-*b*]pyrrole-6,4'-piperidine)]

Step A: Triphenylphosphine (2.29 g) was dissolved in tetrahydrofuran (50 ml) and the solution was cooled to -10°C under argon. Diisopropylazodicarboxylate (1.70 ml) was added dropwise over 10 min and the resulting mixture was stirred at -10°C for 20 min (formation of a white precipitate). 2,2,2-Trifluoro-N-(2-iodo-thiophen-3-yl)-acetamide (2.25 g) dissolved in a minimum volume of tetrahydrofuran was added, followed by 4-Hydroxymethyl-3,6-dihydro-2H-pyridine-1-carboxylic acid tert-butyl ester (*J. Org. Chem.* **2001**, *66*, 5545-5551, 1.49 g) dissolved in a minimum volume of tetrahydrofuran. The reaction mixture was allowed to warm to room temperature and stirred for 12 hours. The solution was then concentrated *in vacuo* and the residue subjected to silica gel chromatography (cyclohexane:ethyl acetate 93:7) to afford 4-{[(2-Iodo-thiophen-3-yl)-(2,2,2-trifluoro-acetyl)-amino]-methyl}-3,6-dihydro-2H-pyridine-1-carboxylic acid tert-butyl ester as a colourless oil (2.27 g). ^{1}H NMR (400 MHz, $CDCl_3$) 1.5 (s, 9H), 2.15 (m, 2H), 3.43 (m, 1H), 3.52 (m, 1H), 3.75 (d, J = 19 Hz, 1H), 3.77 (m, 2H), 4.76 (d, J = 17 Hz, 1H), 5.41 (s, 1H), 6.68 (br d, J = 5.5 Hz, 1H), 7.42 (d, J = 5.5 Hz, 1H); MS (ES+) 417 ($M+H^+$-CO_2-isobutene), 458 ($M+H^+$-isobutene).

Step B: In a dried, argon purged flask, -{[(2-Iodo-thiophen-3-yl)-(2,2,2-trifluoro-acetyl)-amino]-methyl}-3,6-dihydro-2H-pyridine-1-carboxylic acid tert-butyl ester obtained in Step A (1.57 g) was dissolved in dimethylacetamide (25 ml); triethylamine (1.05 ml), tetrabutylammonium bromide (1.08 g) and palladium(II) acetate (103 mg) were successively added and the solution was heated at 80°C for 4 hours. Palladium(II) acetate (20 mg) was added again and the mixture stirred at 80°C for 3 more hours. After cooling to room temperature, the reaction mixture was diluted with ethyl acetate, washed with brine, dried over sodium sulphate and concentrated *in vacuo*. Silica gel chromatography of the residue

(cyclohexane:ethyl acetate 8:2) afforded 4-trifluoroacetyl-spiro[5,6-dihydro-4H-thieno[3,2-*b*]pyrrole-6,4'-(1',2',3',4'-tetrahydropyridine)]-1' carboxylic acid tert-butyl ester (0.9 g). ^{1}H NMR (40 MHz, $CDCl_3$) 2 rotamers, 1.54 (s, 9H), 2.05 (m, 2H), 3.65-3.80 (m, 2H), 4.20-4.30 (m, 2H), 4.70 and 4.80 (m, 1H), 6.82 and 6.96 (m, 1H), 7.23 (d, J = 5.5 Hz, 1H), 7.42 (d, J = 5.5 Hz, 1H); MS (ES+) 288 ($M+H^+$-isobutene).

Step C: 4-trifluoroacetyl-spiro[5,6-dihydro-4H-thieno[3,2-*b*]pyrrole-6,4'-(1',2',3',4'-tetrahydropyridine)]-1' carboxylic acid tert-butyl ester obtained in Step B (0.9 g) was dissolved in methanol (30 ml) and water (5 ml), placed under argon and potassium carbonate (28 g) was added. The reaction mixture was stirred for 10 min at room temperature, the mixture was filtered and the filtrate concentrated *in vacuo*. The residue was diluted with ethyl acetate, washed with brine, dried (sodium sulphate) and concentrated *in vacuo*. The residue was immediately dissolved in dichloromethane (40 ml) and acylated with 2-chloroisonicotinoyl chloride (800 mg) in the presence of triethylamine (1 ml) at 0°C for 1 hour. Standard aqueous work-up and silica gel chromatography (cyclohexane:ethyl acetate 8:2) afforded 4-(2-chloropyridin-4-yl)carbonyl-spiro[5,6-dihydro-4H-thieno[3,2-*b*]pyrrole-6,4'-(1',2',3',4'-tetrahydropyridine)]-1' carboxylic acid tert-butyl ester (0.83 g). M.p. 63-65°C; MS (ES+) 332/334 ($M+H^+$-CO_2-isobutene), 376/378 ($M+H^+$-isobutene), 432/434 ($M+H^+$).

Step D: 4-(2-chloropyridin-4-yl)carbonyl-spiro[5,6-dihydro-4H-thieno[3,2-*b*]pyrrole-6,4'-(1',2',3',4'-tetrahydropyridine)]-1' carboxylic acid tert-butyl ester obtained in Step C (216 mg) was dissolved in dichloromethane (15 ml) and treated successively with triethylsilane (0.4 ml) and trifluoroacetic acid (0.75 ml); the solution was stirred under argon for 6 hours, diluted with dichloromethane, neutralised with aqueous sodium bicarbonate, dried (sodium sulphate) and concentrated *in vacuo*. The residue was dissolved in acetonitrile (15 ml) and treated with diisopropylethylamine (0.14 ml) and 4-chlorocinnamyl chloride (96 mg) for 24 hours at room temperature. Standard aqueous work-up afforded a residue which was purified by flash chromatography (silica gel, cyclohexane:ethyl acetate 8:2+ 0.5 % triethylamine) to give the title product (170 mg) as a colourless solid. M.p. 81-82°C; ^{1}H NMR (600 MHz, $CDCl_3$) 2 rotamers: 1.81-1.94 (m, 4H), 2.60-2.71 (m, 4H), 3.21 and 3.23 (d, J = 7 Hz, 2H), 4.03 and 4.35 (s, 2H), 5.63 and 7.55 (d, J = 5.9 Hz, 1H), 6.26 and 6.29 (dt, J = 12.9 Hz, 7 Hz, 1H), 6.51 and 6.53 (d, J = 12.9 Hz, 1H), 6.96 and 7.23 (d, J = 5.9 Hz, 1H),

7.26-7.49 (m, 6H), 8.53 and 8.54 (d, J = 5.9 Hz, 1H); ^{13}C NMR (125 MHz, $CDCl_2CDCl_2$, 80°C) selected data 37.3, 51.0, 61.1, 67.1 and 77.2, 114.4 and 117.5, 120.3, 122.3, 127.1, 127.5, 127.9, 128.8, 132.0, 150.6; MS (ES+) 484/486/487/489 ($M+H^+$).

EXAMPLE 5

This Example illustrates the pesticidal/insecticidal properties of compounds of formula (I). Test against were performed as follows:

Spodoptera littoralis (Egyptian cotton leafworm)

Cotton leaf discs were placed on agar in a 24-well microtiter plate and sprayed with test solutions at an application rate of 200 ppm. After drying, the leaf discs were infested with 5 L_1 larvae. The samples were checked for mortality, repellent effect, feeding behaviour, and growth regulation 3 days after treatment (DAT). The following compounds gave at least 80% control of *Spodoptera littoralis:*

III-3, III-6, III-7, III-210, III-213, III-325, III-328, V-3, V-6, V-7, LXVI-3, LXVIII-3, LXIX-3.

Heliothis virescens (Tobacco budworm):

Eggs (0-24 h old) were placed in 24-well microtiter plate on artificial diet and treated with test solutions at an application rate of 200 ppm by pipetting. After an incubation period of 4 days, samples were checked for egg mortality, larval mortality, and growth regulation. The following compounds gave at least 80% control of *Heliothis virescen:*

III-3, III-6, III-7, III-210, III-213, III-214, III-325, III-328, III-329, V-3, V-6, V-7, XLV-3, XLV-6 XLV-7, LXIV-3, LXVI-3, LXVIII-3, LXIX-3, LXXX-3.

Plutella xylostella (Diamond back moth):

24-well microtiter plate (MTP) with artificial diet was treated with test solutions at an application rate of 18.2 ppm by pipetting. After drying, the MTP's were infested with larvae (L2)(10-15 per well). After an incubation period of 5 days, samples were checked for larval mortality, antifeedant and growth regulation. The following compounds gave at least 80% control of *Plutella xylostella:*

III-3, III-6, III-7, III-210, III-213, III-214, III-325, III-329, V-3, V-6, V-7, XLV-3, LXVI-3, LXVIII-3, LXIX-3.

Myzus persicae (Green peach aphid):

Sunflower leaf discs were placed on agar in a 24-well microtiter plate and sprayed with test solutions at an application rate of 200 ppm. After drying, the leaf discs were infested with an aphid population of mixed ages. After an incubation period of 6 DAT, samples were checked for mortality. The following compounds gave at least 80% control of *Myzus persicae:*

III-3, III-7, V-6, LXVI-3, LXVIII-3.

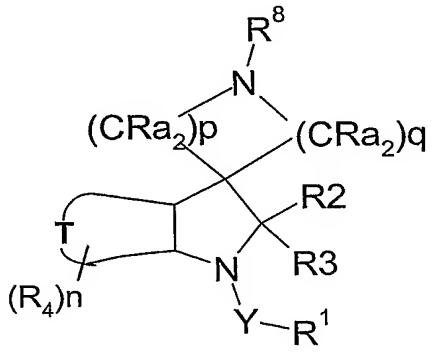
Aedes aegypti (Yellow fever mosquito):

10-15 Aedes larvae (L2) together with a nutrition mixture are placed in 96-well microtiter plates. Test solutions at an application rate of 2ppm are pipetted into the wells. 2 days later, insects were checked for mortality and growth inhibition. The following compounds gave at least 80% control of *Aedes aegypti*

III-3, III-6, III-7, III-210, III-213, III-214, III-325, III-328, III-329, V-3, V-6, V-7, XLV-3, XLV-6 XLV-7, LXIV-3, LXVI-3, LXVIII-3, LXIX-3.

CLAIMS

1. A method of combating and controlling insects, acarines, nematodes or molluscs which comprises applying to a pest, to a locus of a pest, or to a plant susceptible to attack by a pest an insecticidally, acaricidally, nematicidally or molluscicidally effective amount of a compound of formula I.



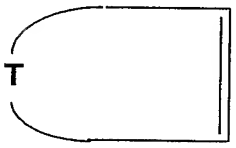
(I)

wherein Y is a single bond, C=O, C=S or $S(O)_m$ where m is 0, 1 or 2;
R^1 is hydrogen, optionally substituted alkyl, optionally substituted alkoxycarbonyl, optionally substituted alkylcarbonyl, aminocarbonyl, optionally substituted alkylaminocarbonyl, optionally substituted dialkylaminocarbonyl, optionally substituted aryl, optionally substituted heteroaryl, optionally substituted alkoxy, optionally substituted aryloxy, optionally substituted heteroaryloxy, optionally substituted heterocyclyloxy, cyano, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted cycloalkenyl, formyl, optionally substituted heterocyclyl, optionally substituted alkylthio, NO or $NR^{13}R^{14}$ where R^{13} and R^{14} are independently hydrogen, COR^{15}, optionally substituted alkyl, optionally substituted aryl, optionally substituted heteroaryl, optionally substituted heterocyclyl or R^{13} and R^{14} together with the N atom to which they are attached form a group $-N=C(R^{16})-NR^{17}R^{18}$; R^{15} is H, optionally substituted alkyl, optionally substituted alkoxy, optionally substituted aryl, optionally substituted aryloxy optionally substituted heteroaryl, optionally substituted heteroaryloxy or $NR^{19}R^{20}$; R^{16}, R^{17} and R^{18} are each independently H or lower alkyl;

R^{19} and R^{20} are independently optionally substituted alkyl, optionally substituted aryl or optionally substituted heteroaryl;

R^2 and R^3 are independently hydrogen, halogen, cyano, optionally substituted alkyl, optionally substituted alkoxy or optionally substituted aryl;

the ring



is a 5 or 6 membered heteroaromatic ring;

each R^4 is independently halogen, nitro, cyano, optionally substituted C_{1-8} alkyl, optionally substituted C_{2-6} alkenyl, optionally substituted C_{2-6} alkynyl, optionally substituted alkoxycarbonyl, optionally substituted alkylcarbonyl, optionally substituted alkylaminocarbonyl, optionally substituted dialkylaminocarbonyl, optionally substituted C_{3-7} cycloalkyl, optionally substituted aryl, optionally substituted heteroaryl, optionally substituted heterocyclyl, optionally substituted alkoxy, optionally substituted aryloxy, optionally substituted heteroaryloxy, optionally substituted alkylthio or $R^{21}R^{22}N$ where R^{21} and R^{22} are, independently, hydrogen, C_{1-8} alkyl, C_{3-7} cycloalkyl, C_{3-6} alkenyl, C_{3-6} alkynyl, C_{3-7} cycloalkyl(C_{1-4})alkyl, C_{2-6} haloalkyl, C_{1-6} alkoxy(C_{1-6})alkyl, C_{1-6} alkoxycarbonyl or R^{21} and R^{22} together with the N atom to which they are attached form a five, six or seven-membered heterocyclic ring which may contain one or two further heteroatoms selected from O, N or S and which may be optionally substituted by one or two C_{1-6} alkyl groups, or 2 adjacent groups R^4 together with the carbon atoms to which they are attached form a 4, 5, 6,or 7 membered carbocyclic or heterocyclic ring which may be optionally substituted by halogen; n is 0, 1, 2 or 3;

each Ra is independently hydrogen, halogen, hydroxy, cyano, optionally substituted C_{1-8} alkyl, optionally substituted C_{2-6} alkenyl, optionally substituted C_{2-6} alkynyl, optionally substituted alkoxycarbonyl, optionally substituted alkylcarbonyl, optionally substituted alkylaminocarbonyl, optionally substituted dialkylaminocarbonyl, optionally substituted C_{3-7} cycloalkyl, optionally substituted aryl, optionally substituted heteroaryl, optionally substituted heterocyclyl, optionally substituted alkoxy, optionally substituted aryloxy, optionally substituted heteroaryloxy,

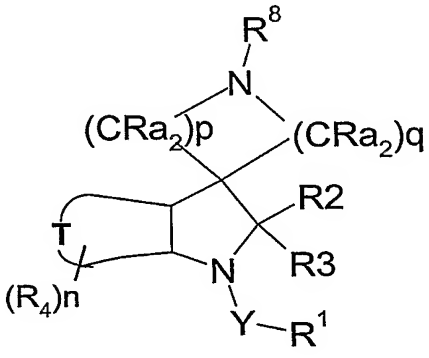
optionally substituted alkylthio, optionally substituted arylthio or $R^{23}R^{24}N$ where R^{23} and R^{24} are, independently, hydrogen, C_{1-8} alkyl, C_{3-7} cycloalkyl, C_{3-6} alkenyl, C_{3-6} alkynyl, C_{3-7} cycloalkyl(C_{1-4})alkyl, C_{2-6} haloalkyl, C_{1-6} alkoxy(C_{1-6})alkyl, C_{1-6} alkoxycarbonyl or R^{23} and R^{24} together with the N atom to which they are attached form a five, six or seven-membered heterocyclic ring which may contain one or two further heteroatoms selected from O, N or S and which may be optionally substituted by one or two C_{1-6} alkyl groups, or two Ra groups attached to the same carbon atom are =O or two Ra groups attached to adjacent carbon atoms form a bond, or two Ra groups together with the carbon atom to which they are attached form a three- to seven-membered ring, that may be saturated or unsaturated, and that may contain one or two hetero atoms selected from the group consisting of N, O and S, and which may be optionally substituted by one or two C_{1-6} alkyl groups; or two Ra groups together form a group $-CH_2-$, $-CH=CH-$ or $-CH_2CH_2$;

p is 0, 1, 2, 3, 4, 5 or 6; q is 0, 1, 2, 3, 4, 5 or 6 provided that p+q is 1, 2, 3, 4, 5 or 6;

R^8 is optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted aryl, optionally substituted alkoxy, optionally substituted aryloxy, optionally substituted alkoxycarbonyl, optionally substituted alkylcarbonyl or optionally substituted alkenylcarbonyl; or salts or N-oxides thereof.

2. An insecticidal acaricidal and nematicidal composition comprising an insecticidally, acaricidally or nematicidally effective amount of a compound of formula I as defined in claim 1.

3. A compound of formula I'



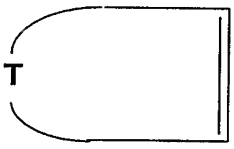
(I')

wherein Y is C=O, C=S;

R^1 is hydrogen, optionally substituted alkyl, optionally substituted alkoxycarbonyl, optionally substituted alkylcarbonyl, aminocarbonyl, optionally substituted alkylaminocarbonyl, optionally substituted dialkylaminocarbonyl, optionally substituted aryl, optionally substituted heteroaryl, optionally substituted alkoxy, optionally substituted aryloxy, optionally substituted heteroaryloxy, optionally substituted heterocyclyloxy, cyano, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted cycloalkenyl, formyl, optionally substituted heterocyclyl, optionally substituted alkylthio, NO or $NR^{13}R^{14}$ where R^{13} and R^{14} are independently hydrogen, COR^{15}, optionally substituted alkyl, optionally substituted aryl, optionally substituted heteroaryl, optionally substituted heterocyclyl or R^{13} and R^{14} together with the N atom to which they are attached form a group $-N=C(R^{16})-NR^{17}R^{18}$; R^{15} is H, optionally substituted alkyl, optionally substituted alkoxy, optionally substituted aryl, optionally substituted aryloxy optionally substituted heteroaryl, optionally substituted heteroaryloxy or $NR^{19}R^{20}$; R^{16}, R^{17} and R^{18} are each independently H or lower alkyl; R^{19} and R^{20} are independently optionally substituted alkyl, optionally substituted aryl or optionally substituted heteroaryl;

R^2 and R^3 are independently hydrogen, halogen, cyano, optionally substituted alkyl, optionally substituted alkoxy or optionally substituted aryl;

the ring



is a 5 or 6 membered heteroaromatic ring;

each R^4 is independently halogen, nitro, cyano, optionally substituted C_{1-8} alkyl, optionally substituted C_{2-6} alkenyl, optionally substituted C_{2-6} alkynyl, optionally substituted alkoxycarbonyl, optionally substituted alkylcarbonyl, optionally substituted alkylaminocarbonyl, optionally substituted dialkylaminocarbonyl, optionally substituted C_{3-7} cycloalkyl, optionally substituted aryl, optionally

substituted heteroaryl, optionally substituted heterocyclyl, optionally substituted alkoxy, optionally substituted aryloxy, optionally substituted heteroaryloxy, optionally substituted alkylthio or $R^{21}R^{22}N$ where R^{21} and R^{22} are, independently, hydrogen, C_{1-8} alkyl, C_{3-7} cycloalkyl, C_{3-6} alkenyl, C_{3-6} alkynyl, C_{3-7} cycloalkyl(C_{1-4})alkyl, C_{2-6} haloalkyl, C_{1-6} alkoxy(C_{1-6})alkyl, C_{1-6} alkoxycarbonyl or R^{21} and R^{22} together with the N atom to which they are attached form a five, six or seven-membered heterocyclic ring which may contain one or two further heteroatoms selected from O, N or S and which may be optionally substituted by one or two C_{1-6} alkyl groups, or 2 adjacent groups R^4 together with the carbon atoms to which they are attached form a 4, 5, 6,or 7 membered carbocyclic or heterocyclic ring which may be optionally substituted by halogen; n is 0, 1, 2 or 3;

each Ra is independently hydrogen, halogen, hydroxy, cyano, optionally substituted C_{1-8} alkyl, optionally substituted C_{2-6} alkenyl, optionally substituted C_{2-6} alkynyl, optionally substituted alkoxycarbonyl, optionally substituted alkylcarbonyl, optionally substituted alkylaminocarbonyl, optionally substituted dialkylaminocarbonyl, optionally substituted C_{3-7} cycloalkyl, optionally substituted aryl, optionally substituted heteroaryl, optionally substituted heterocyclyl, optionally substituted alkoxy, optionally substituted aryloxy, optionally substituted heteroaryloxy, optionally substituted alkylthio, optionally substituted arylthio or $R^{23}R^{24}N$ where R^{23} and R^{24} are, independently, hydrogen, C_{1-8} alkyl, C_{3-7} cycloalkyl, C_{3-6} alkenyl, C_{3-6} alkynyl, C_{3-7} cycloalkyl(C_{1-4})alkyl, C_{2-6} haloalkyl, C_{1-6} alkoxy(C_{1-6})alkyl, C_{1-6} alkoxycarbonyl or R^{23} and R^{24} together with the N atom to which they are attached form a five, six or seven-membered heterocyclic ring which may contain one or two further heteroatoms selected from O, N or S and which may be optionally substituted by one or two C_{1-6} alkyl groups, or two Ra groups attached to the same carbon atom are =O or two Ra groups attached to adjacent carbon atoms form a bond, or two Ra groups together with the carbon atom to which they are attached form a three- to seven-membered ring, that may be saturated or unsaturated, and that may contain one or two hetero atoms selected from the group consisting of N, O and S, and which may be optionally substituted by one or two C_{1-6} alkyl groups; or two Ra groups together form a group $-CH_2-$, $-CH=CH-$ or $-CH_2CH_2$;

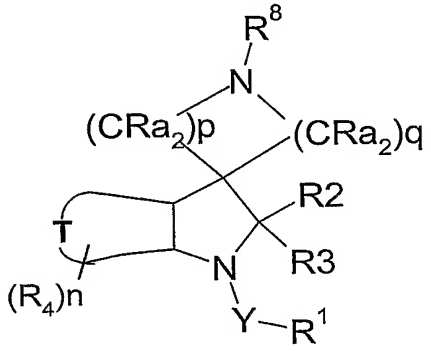
p is 0, 1, 2, 3, 4, 5 or 6; q is 0, 1, 2, 3, 4, 5 or 6 provided that p+q is 1, 2, 3, 4, 5 or 6;

R^8 is optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted aryl, optionally substituted alkoxy, optionally substituted aryloxy, optionally substituted alkoxycarbonyl, optionally substituted alkylcarbonyl or optionally substituted alkenylcarbonyl; or salts or N-oxides thereof .

ABSTRACT

CHEMICAL COMPOUNDS

The use of a compound of formula I



(I)

Y is a single bond, C=O, C=S or $S(O)_m$ where m is 0, 1 or 2; the ring represented by T is a 5 or 6 membered heteroaromatic and R^1 , R^2 , R^3, R^8 and Ra are specified organic groups and p is 0, 1, 2, 3, 4, 5 or 6; q is 0, 1, 2, 3, 4, 5 or 6; p+q is 1, 2, 3, 4, 5 or 6; or salts or N-oxides thereof or compositions containing them in controlling insects, acarines, nematodes or molluscs; novel compounds are also provided.